

Southern Power & Industry

The Industrial and Power Journal of the South and Southwest

OCTOBER, 1958

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Case studies — — — — see page 3

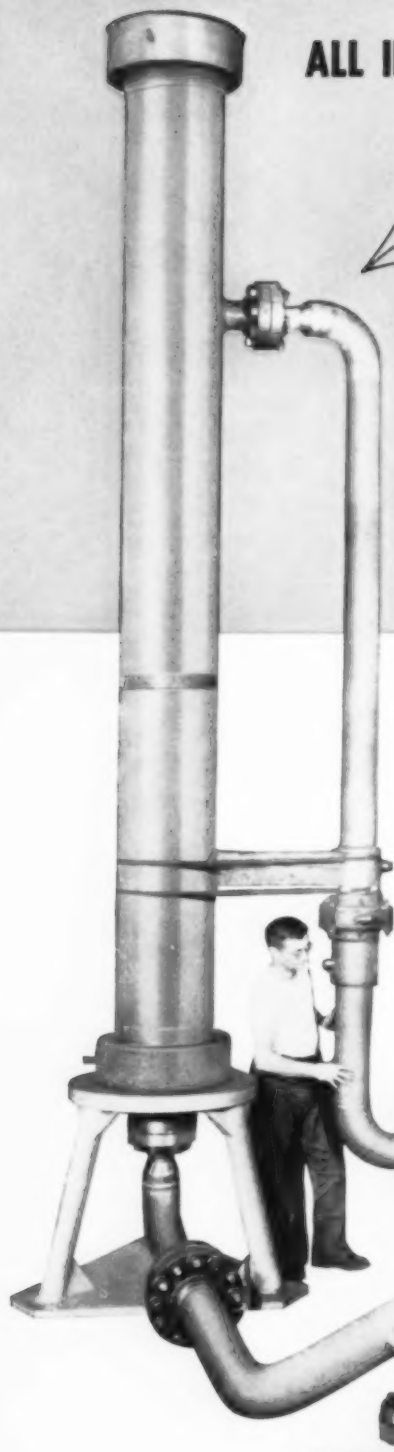
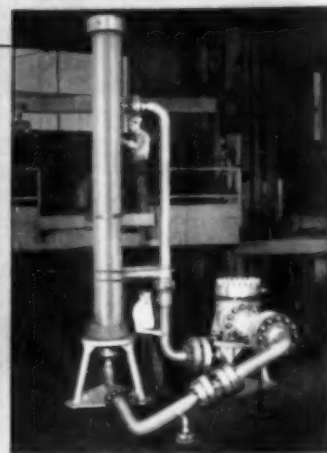
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AUTOCLAVE
and VOLUTE
Shop Fabricated**

by

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This autoclave and volute assembly is typical of the work that goes through Pittsburgh Piping shops. Fabricated of Type 304 Stainless Steel, it is complex in design and is built for high pressure, high temperature service. This type of fabricating is a "natural" for Pittsburgh Piping. We pioneered the application of austenitic steel piping materials for central stations operating at 1050°F. and above, and fabricated the piping for the world's first atomic-powered submarine and central station. Highly specialized methods, machines, and apparatus have been developed and are employed in this work. Use them on your high temperature, high pressure piping jobs.



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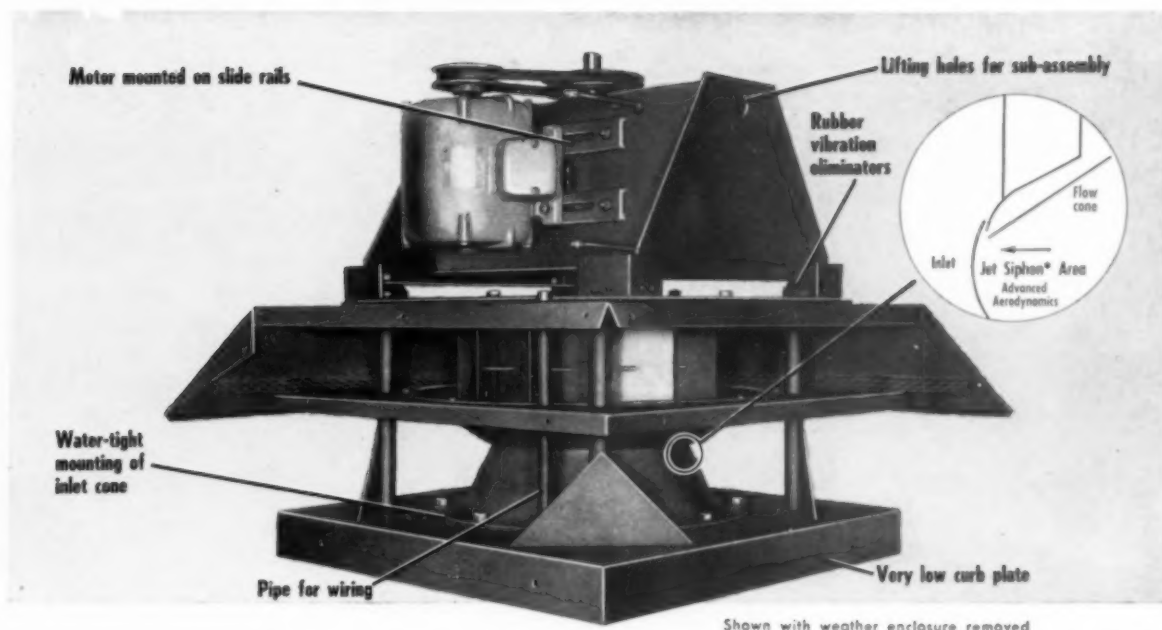
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Volume 76

Number 10



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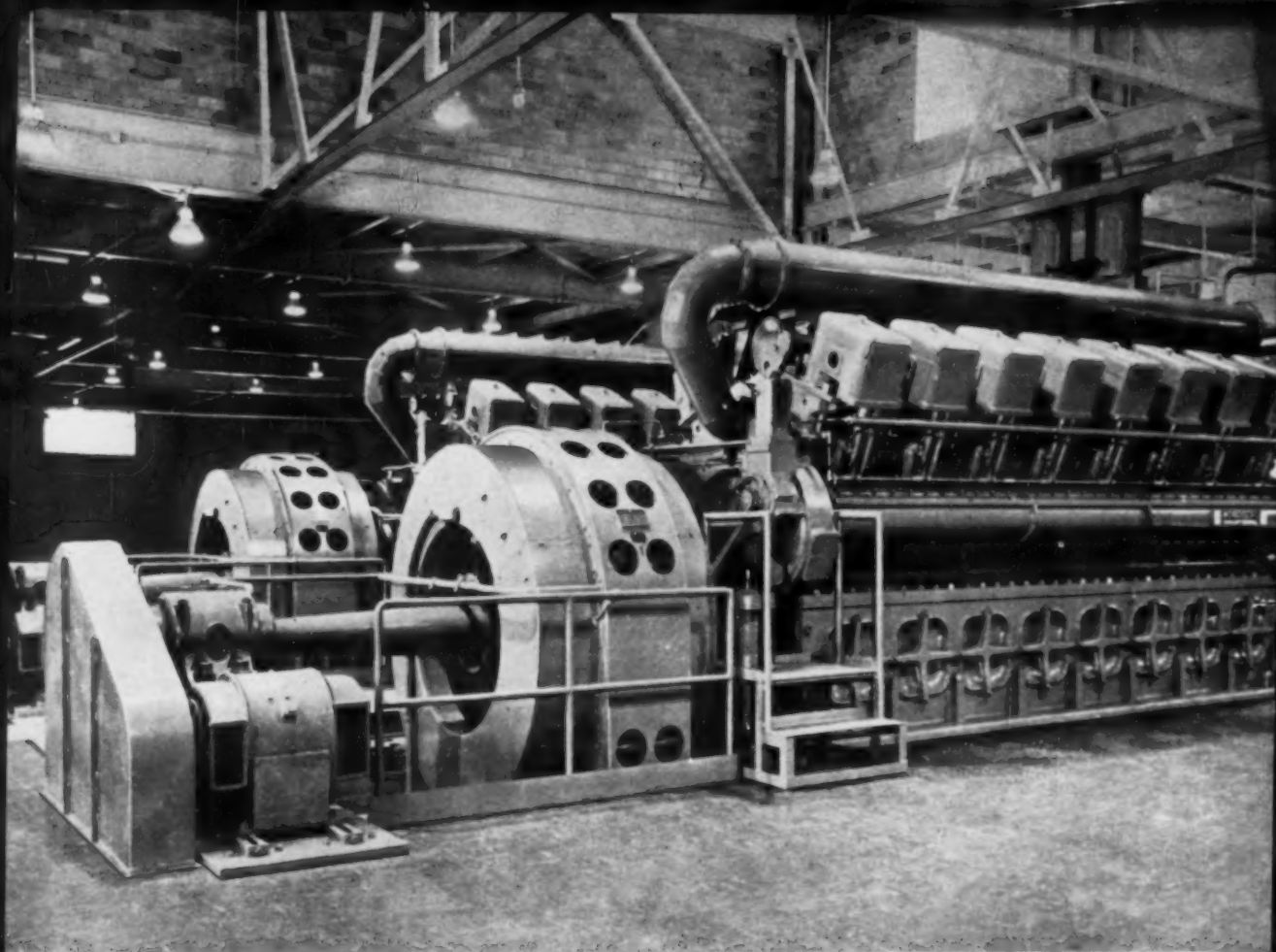
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Bore and stroke of each engine is 13 x 16½"; each is rated at 3,500 hp at 514 rpm. Each generator has a net rating of 2,500 kw.

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Southern Power & Industry

The Industrial and Power Journal of the South and Southwest

Eugene W. O'Brien
Managing Director

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No. 10

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SOUTHERN POWER & INDUSTRY for OCTOBER, 1958



Facts and Trends

October 1, 1958

- ◆ **THERE IS ALWAYS A BETTER WAY** — This is your 11th Annual BETTER PRODUCTION Issue and your associates in Southern & Southwestern industrial plants report their solutions to various engineering and operating problems.

Some of these ideas & methods can be easily adapted, but in most cases several ideas will be subjected to your own improvements and your final result will undoubtedly be better than the one reported.
- ◆ **HEAT EXCHANGER** — Russell Manufacturing in Alabama needed more steam and had to remedy the situation in a hurry. Installation of a waste water to fresh water heat exchanger did the job. It extracts a large amount of latent heat from the tremendous volume of hot waste effluent of the bleachery and transfers this saving to the boiler room in terms of a proportionate reduction in steam demand. Details are on page 34.
- ◆ **PROTECTIVE SURFACING** has inhibited corrosion activity in the 42-in. diameter base of 50 ft high steel stacks at General Electric's Hickory, North Carolina plant. Ash, soot, etc., dropping out of suspension, settled at the base. Page 37 briefs corrective measures.
- ◆ **YOUR INSPECTORS GETTING COOPERATION?** Enmity between quality control and production is somewhat traditional in industry. Sometimes friendly enmity becomes not so friendly and higher management must intervene. The Wolverine Tube Division of Calumet & Hecla in Decatur, Alabama gets good results with a process inspector system. Page 40 details how the roving inspector gets cooperation.
- ◆ **SAVINGS WITH HOT SPRAY** — On page 42 Globe Box of Houston outlines production benefits of hot spray in finishing furniture legs. Viscosity of the material is lowered by heat instead of thinner. Hot spray equipment is also used extensively in maintenance work.
- ◆ **DUAL FIRING ARRANGEMENT** at the dyeing facilities of Virginia Mills in North Carolina permits taking advantage of any special price situation and assures continued operation during shortages of either gas or coal due to weather conditions, strikes, etc. Boiler expansion is highlighted on page 43.
- ◆ **USE OF TRANSLUCENT PANELS** may cut your plant construction and lighting costs. A detailed lighting survey and cost analysis on the Jamar-Olmen Houston plant is summarized on page 44.
- ◆ **ALUMINUM JACKETING** weatherproofs and protects insulation on large towers and vessels at Phillips Petroleum Company's Sweeny, Texas. Extensive installation, noted on page 48, features cross-crimped, deep corrugated jacketing with factory attached moisture barrier. Latter increases jacketing sheet strength about 28%, which means cost savings.



BULLETIN 798 Multi-Unit Control Centers



With Allen-Bradley plug-in type units, starters can be added or removed from the section without disconnecting the rest of the control center from the line.

Built to ALLEN-BRADLEY QUALITY STANDARDS!

A-B Control Centers
are popular because of their
Quality Appearance . . .
Quality Construction

With control centers more than with individual starters, the appearance is often very important — frequently the control center is used as a “show” installation. The “Quality” built into Allen-Bradley Control Centers cannot be beat — it is a “plus” value which you obtain without extra cost.

Naturally, the installation of an Allen-Bradley Control Center provides additional values — such as those outlined below.

ADAPTABLE TO PLANT CHANGES—Entire units can be moved or complete sections can be added to meet plant changes without the need for changing the internal wiring of the control center.

GREATER SAFETY—Centralized control and locked operating handles prevent tampering by unauthorized personnel. Panels have “dead front” construction with buses and wiring completely enclosed.

MODERN APPEARANCE—This neat, compact installation eliminates the unsightly supporting structures of individually mounted starters and the numerous conduits between separate starters.

LOWER OVER-ALL COST—A-B Control Centers arrive wired and tested. Installation cost is a fraction of that for individual starters. Standardized units eliminate custom engineering.

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Facts and Trends (Continued)

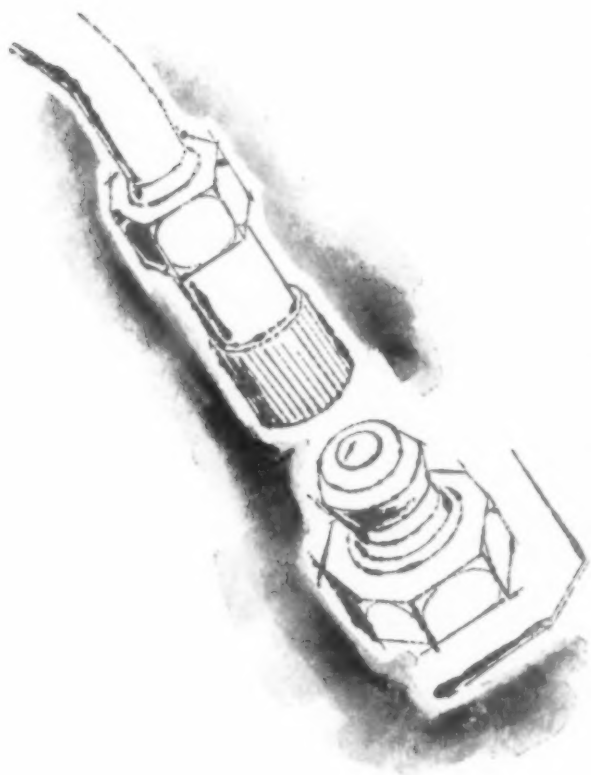
- ◆ **STAINLESS STEEL CONDENSER TUBES** — How a complete main steam condenser was retubed with all stainless steel tubes is described on page 52. Monongahela Power Company's Rivesville Station in West Virginia just installed 9,234 stainless steel tubes — 26 ft long and 7/8-in. outside diameter, giving a condensing surface area of 55,000 sq ft.
- ◆ **HUMIDITY CONDITIONING** — Production of yeast at Belle Chasse, Louisiana required slow, even removal of moisture at pre-determined rates. Page 66 describes the automatic humidity conditioning equipment selected. It has only two moving parts and there is no carryover of absorbent solution into delivered air stream.
- ◆ **DEAERATOR VENT MEASUREMENT** — Improper separation of water from the vent steam and non-condensable gases being vented from deaerators without vent condensers can be costly if not corrected. A plant-tested venting system used at the Scholz Steam Plant of the Gulf Power Co. is described on page 80.
- ◆ **SAVINGS WITH NO. 6 FUEL OIL** — Converting from No. 2 fuel oil to residual fuel operation has saved an average of \$72,000 annually for Clay Electric Co-Operative in Keystone Heights, Florida. Page 106 gives the details. Maintenance costs on the diesel engines have been no higher than before the switch was made.
- ◆ **MAN-IN-THE-PLANT SAFETY MANUAL** — Chemstrand Corporation has built its award-winning safety program around employee participation. Maintenance department personnel, foremen, etc., submitted rules for the manual. The result, highlighted on page 100, is an excellent Plant Engineering Maintenance Dept. Safety Manual.
- ◆ **SOLID FUELS CONFERENCE** at the Chamberlin Hotel, Old Point Comfort, Virginia on October 9-10th will be the 21st Annual Meeting. Top flight technical program was summerized in SPI for SEPTEMBER, page 28. For general information write Carl Dennis, Fuel Service Engineer, C&O Railway, 823 E. Main, Richmond, Va.

Other important engineering meetings noted on page 19 of this issue, include the Corrosion Engineers' Conference and Exhibition in New Orleans, October 20-24th; and the 23rd National Exposition of Power & Mechanical Engineering in New York December 1-5th.
- ◆ **COMING IN SPI for NOVEMBER . . .**

PAINTS & PROTECTIVE COATINGS . . . a 16-page adaptation of the INDUSTRIAL PAINT SYSTEMS manual of the Southwestern Public Service Company; supplemented by a special tabulation "briefing" up-to-date manufacturers' catalogs and bulletins on paints, coatings and application equipment.

Beating corrosion in the South-Southwest is a man size job — Because of "open-type" construction, the majority of process and utility plants are subjected to extreme exposure conditions. Paints and protective coatings must offer superior protection from heat, high humidity, salt air and chemical fumes.

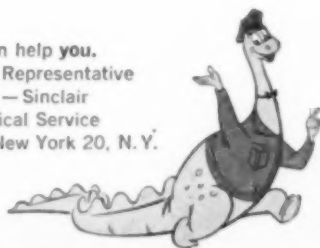
This exclusive editorial feature in SPI for NOVEMBER will help you get the right material for the job and get it properly applied at a reasonable cost for good service and protection.



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Sinclair Litholine® multi-purpose grease gives many important advantages over ordinary industrial lubricants. For example, it eliminates the need for a variety of single-use greases. Furthermore, it has earned a reputation for water resistance and high temperature performance. Change to Litholine, now. And when management asks how you've cut costs, tell them you've switched to Sinclair—and show them the results.

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the SOUTH—SOUTHWEST

more power . . . more plants . . . more money

\$40 Million Air Reduction Investment — Kentucky

\$12 Million Chemical Plant is Air Reduction's 6th Calvert City Unit

A 20 million lb/yr polyvinyl alcohol resin plant is being built by **Air Reduction Company** at Calvert City, Kentucky. The \$12 million project will also include an expansion doubling the capacity of the existing 45 million lb/yr vinyl acetate monomer plant. Lummus Company is the engineer-contractor of the plant expected to be completed by early 1960.

Polyvinyl alcohol is used in the preparation of adhesives, textile sizing and finishes, paper coatings and as emulsifying and thickening agents. It is also the basic constituent of vinylon fiber for wearing

apparel and many industrial fabrics.

The new facility at Calvert City will be the 6th Air Reduction plant to be built at this growing West Kentucky industrial and chemical center. In total, it will represent an investment by the Company of almost 40 million dollars in its Calvert City operations.

Currently in operation at Calvert City are the National Carbide division's calcium carbide and acetylene generating plant, the Air Reduction Sales Company division's oxygen and nitrogen plant, and the Air Reduction Chemical division's vinyl acetate monomer plant. Just com-

Kansas City — A new Airco plant is being built by Collins Construction Company in the Armourdale district of Kansas City, Kansas.

The Air Reduction Sales Company's unit, scheduled for December '58 completion, will produce 5 million cu ft of oxygen per month as well as high purity nitrogen.

pleted in May, 1958, is a plant for the production of methyl butynol and methyl pentynol. A vinyl stearate plant is nearing completion. Under construction is a plant for the recovery of calcium oxide from residue materials produced in the generation of acetylene gas from calcium carbide.



FORT WORTH, TEXAS — The first unit of this \$1 million pharmaceutical plant is under construction on an 87 acre tract in Fort Worth, Texas for **Alcon Laboratories, Inc.** Alcon specializes in the manufacture of over 45 rhinologic and sterile ophthalmic pharmaceuticals. Plant is designed for twin automatic assembly lines. Air conditioning and air filtering equipment is being custom made to provide a dust-free and bacteria-free atmosphere. **W. C. Conner** is President of Alcon; **R. D. Alexander**, Vice-President and Director of Sales; and **R. W. Carter**, Director of Manufacturing.

Emerson Electric Erecting \$600,000 Branch Plant—Mo.

A building area of 106,000 sq ft has been set aside in Kennett, Mo. for a \$600,000 branch plant for **Emerson Electric Manufacturing Co.** of St. Louis. Construction is expected by late summer or early fall with operations anticipated to begin by May or June of 1959.

Emerson will furnish the plant with more than one million dollars' worth of equipment, will employ approximately 250 persons, and will have an annual payroll of \$500,000.

The branch manufacturing plant, located on a 15 acre tract, will be leased from the Kennett Development Corp. by Emerson with an option to buy and an option to rent upon termination of the initial lease.

TRI-SUL-ITE

3-WAY PROTECTION SYSTEM

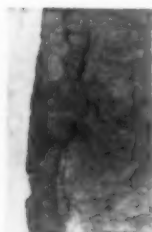


FOR UNDERGROUND HOT PIPES

Tri-sul-ite, a specially selected gilsonite, is poured under and around all pipes in the trench. After proper curing, it forms three zones of protection against water, corrosion and heat loss. Above, close-up photo illustrates the plastic zone of Tri-sul-ite pealed back to show excellent adhesion for pipe protection.



Our new executive office building at
Great Neck, N. Y.



One of our gilsonite
veins in Utah.



Our plant at New Market, N. J.



Tri-sul-ite ready for
shipment at Craig, Colo.



Gilsonite laboratory at New Market,
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a continuous research project.

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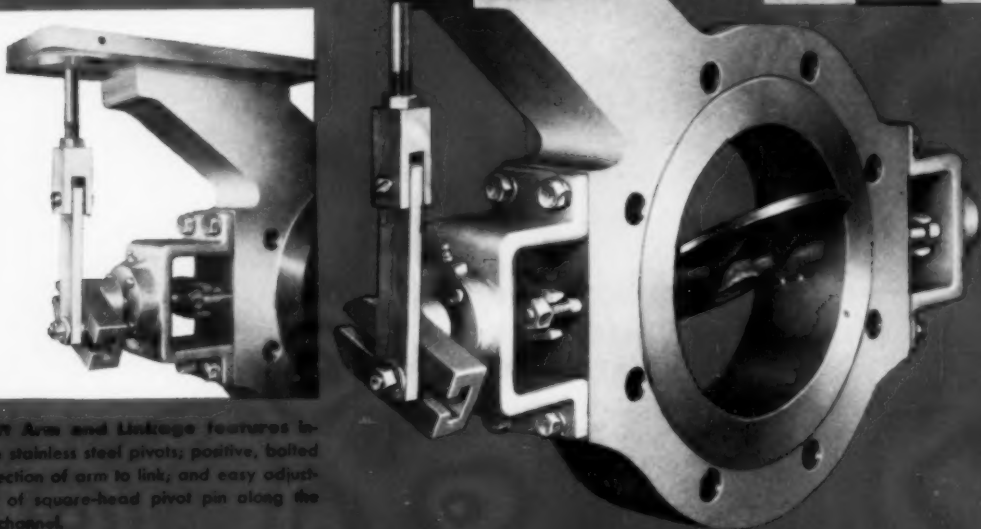
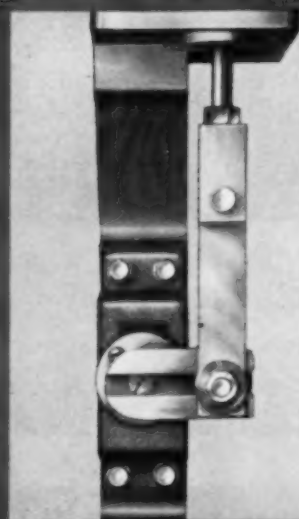


MASON-NEILAN Develops...

NEW 32000 SERIES BUTTERFLY VALVE

with spring-diaphragm actuator and positioner.

One feature is rugged adjustable mounting plate for actuator. Maximum power — and minimum angularity — is achieved by positioning the actuator so that connecting stem and link are in line and at right angles to shaft arm at midstroke. This is possible in 60° , 90° , or any intermediate degree of operation because mounting plate is slotted for adjusting actuator to proper position.



Short Arm and Linkage features include stainless steel pivots; positive, bolted connection of arm to link, and easy adjustment of square-head pivot pin along the arm channel.

A NEW DESIGN WITH NEW FEATURES IN BUTTERFLY VALVES

Now, a major advance in Butterfly Valve design! Mason-Neilan's new line of wafer type Butterfly Valves offers an outstanding combination of advantages for improved operation, simplified maintenance and reduced downtime.

The features in this Masoneilan Butterfly Valve line speak for themselves! Simple, attractive and rugged design, mounting flexibility, ease of adjustment, accessibility and maximum actuator power delivery.

Wide range of sizes now available. 32000 Series covers sizes from 2" to 24"; materials of cast iron, cast alloys, or flame cut carbon steel; ratings to 250 lb ASA iron and 300 lb ASA steel; and with Spring-diaphragm, Handwheel or Lever actuation.

Send for Bulletin or contact your nearest Mason-Neilan Representative.

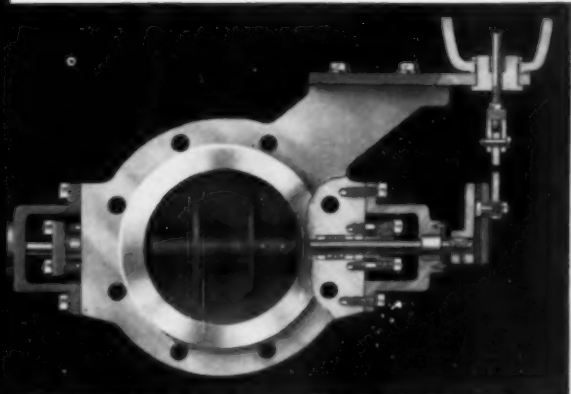
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Division of Worthington Corp.

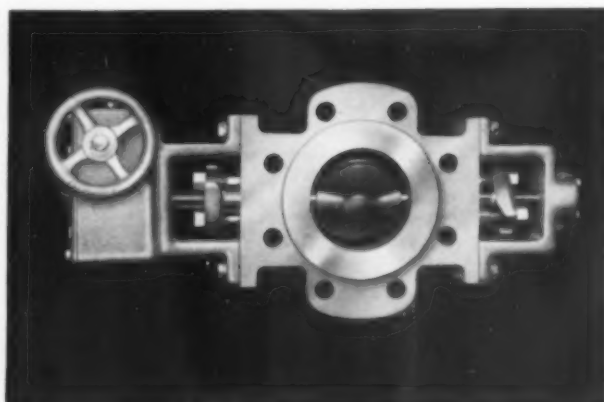
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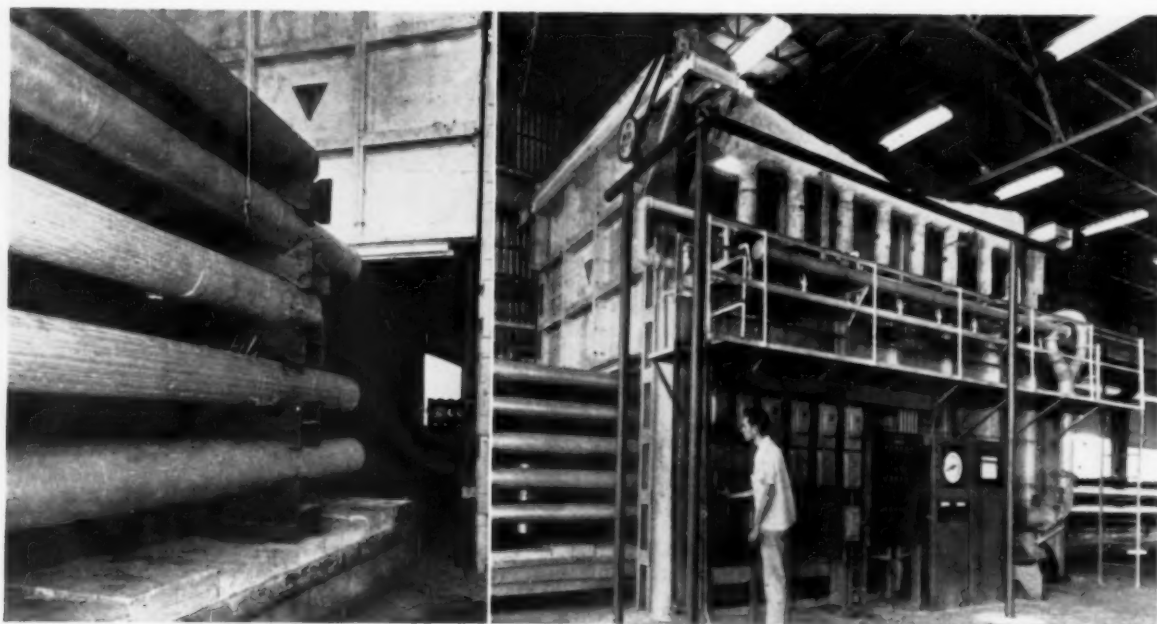
In Canada: Mason-Neilan Regulator Co., Ltd., Brantford, Montreal, Toronto



Maintenance is greatly simplified by bearing brackets sized to permit easy access to packing box and removal of self-centering packing gland and follower. Packing can be added without disassembly of brackets. Packing box may be lubricated, non-lubricated or purge type.



32000 Series Butterfly Valves are available with either Handwheel or Lever actuation. Handwheel types are supplied with a closed gear box, which includes indicator. When used with power actuator, declutching is provided. Travel stops are available.



Aluminum logs . . .

HOMOGENIZING IN MISSISSIPPI ALUMINUM PLANT

THIS car-type homogenizing furnace (charge and side views) was recently installed at the Olin Mathieson Chemical Corporation's aluminum extrusion plant in Gulfport, Mississippi. The Despatch Oven Company furnace, with a capacity of 50,000 lb of aluminum per charge, is 11 ft high, more than 17 ft wide, nearly 23 ft long and operates at 1250 F. Charge for the furnace consists of 50-60 aluminum logs each weighing approximately 1,000 lb, stacked aboard a flatcar. Indirect gas-fired, radiant tube type furnace has identical doors at each end so the flatcar can be loaded at one end and discharged at the other.

Gypsum Plant — Ga.

\$7,500,000 plant is underway in Brunswick, Georgia for **Bestwall Gypsum Co.** Scheduled for completion in late 1959, the new facility will have a capacity of 300,000,000 sq ft of gypsum board and lath products annually and will use up to 300,000 tons of gypsum ore per year.

U. S. Rubber Expanding 3 Southern Plants

Plans have been made for the expansion of production facilities at the Hogansville, Ga., Shelbyville, Tenn., and Winnsboro, S. C. plants of the **United States Rubber Co.** Some

of the industrial textile products which will receive special attention in the expansion program are yarns and fabrics for filtration and coating, yarns for the webbing and wire industries and polyethylene yarns.

Jumbo Mfg. Builds in S. C.

Preliminary operations begin this month in the first unit of **Jumbo Manufacturing Co.** at Central, S. C. The 80,000 sq ft plant will be used for the manufacture and assembly of wood novelties. The present construction cost is estimated at \$600,000. The over-all planning calls for a manufacturing building containing 300,000 sq ft of space.

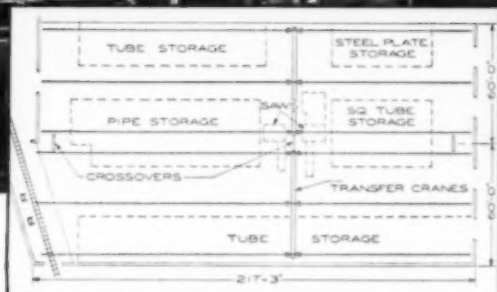
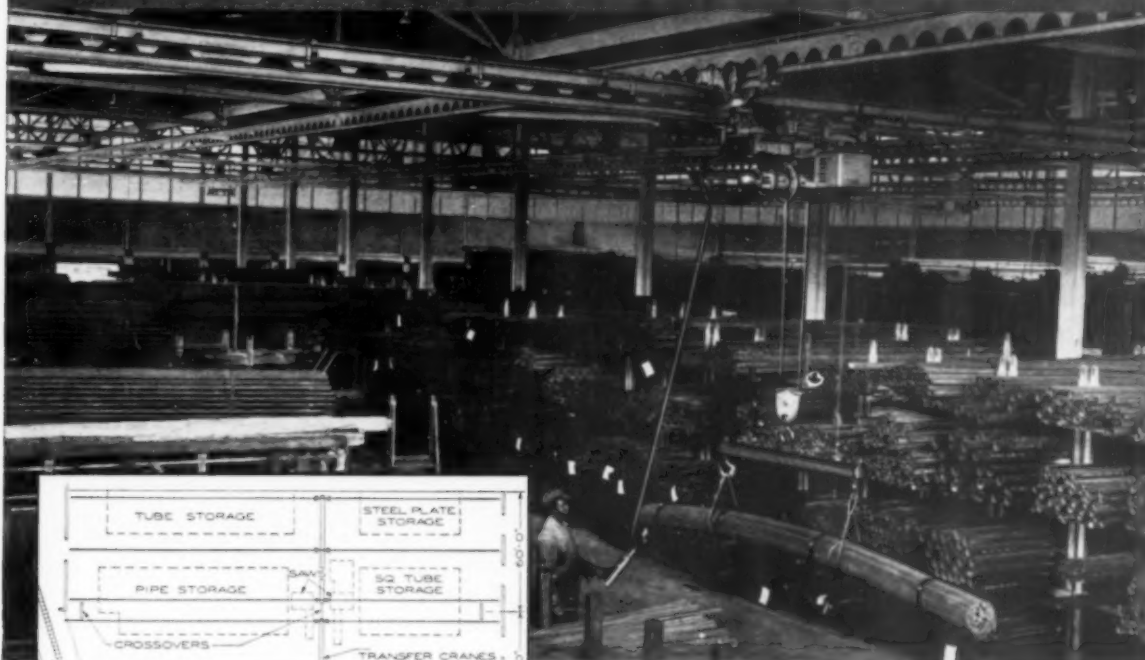
Pan American Gas Plant — Texas

November completion is anticipated for the natural gas processing plant 18 miles north of Monahans, Texas, for **Pan American Petroleum Corporation.**

To be designated Monahans Gasoline Plant, the facility located on a 20 acre site, will process casinghead gas from five formations of the North Monahans field. Initially, capacity will be 4 million cubic feet of gas a day with one compressor, but the design allows an ultimate capacity of 12 million cubic feet a day, with the addition of more equipment.

The Monahans plant is a compression-refrigeration plant and will initially house one main compressor of 1,320 hp.

TRAMRAIL TRANSFER CRANES SYSTEMATIZE HANDLING IN STEEL WAREHOUSE



The large storage area is completely covered by Tram-rail crane service. Every item can be seen from the floor and readily reached with the two transfer cranes.

The Tramrail transfer cranes make it easy to place the long unwieldy pipes and bar stock into storage at any height. This makes for orderliness, which is an important factor in securing high operating efficiency.

A LARGE modern warehouse at Atlanta, Georgia, was designed to make use of overhead Tramrail equipment to enable the handling of large unit loads in and out of storage with the least effort and in the quickest time.

The principal storage section is provided with two parallel runways each having three tracks. On both runways is a 64-foot transfer crane that travels the length of the room. Cross-overs are provided, enabling a hoist carrier transferring from one crane to the other. This makes it possible to haul materials between any two points in the entire area without rehandling.

Steel is constantly on the move in this active

plant. From 60,000 to 70,000 lbs. are brought in by railroad car daily and like amounts are shipped out. The material is unloaded from railroad cars at one end of the building and placed into storage. It is shipped out on trucks which are loaded at the other end.

The overhead crane system makes it possible to place incoming materials into allotted storage spaces at once. The need of storing temporarily in aisles or other areas and extra handling which this entails is eliminated. Thus, the warehouse is kept orderly at all times and every item is readily seen and conveniently reached. Danger of handling accidents is minimized and overall efficiency is unusually high.

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CLEVELAND TRAMRAIL DIVISION
THE CLEVELAND CRANE & ENGINEERING CO.

7481 East 284 Street, Wickliffe, Ohio

CLEVELAND TRAMRAIL
OVERHEAD MATERIALS HANDLING EQUIPMENT

Alabama Sausage Firm Expanding

A \$200,000 modernization and expansion program was recently completed at the Selma, Alabama plant of **R. L. Zeigler, Inc.** and the Company has plans for expansion of the Tuscaloosa slaughtering and processing plants and the Bessemer processing plant. This will bring total investment for new facilities at the three Zeigler operations up to around \$1,500,000.

\$1 MILLION HOUSTON PLANT FOR METAL GOODS

With completion scheduled for June, 1959, a 170 ft x 327 ft warehouse and 50 ft x 227 ft industrial products division and shop facilities area building are being constructed on a 12.5 acre site in Houston, Texas for **Metal Goods Corporation**.

Project was designed by Syl G. Schmidt and Associates and is being built by Manhattan Construction Company of Texas. Mosher Steel Company of Houston has the structural steel and bar joint contract.

Harris T. Gregg, vice-president is regional manager of the Metal Goods' southern operations and **Charles G. Gribble, Jr.** is manager. The company, with St. Louis headquarters, is a distributor for Alcoa, American Brass, Armco Steel, International Nickel, B&W Tubular Products Div., and many other leading industrial metal concerns. Nine warehouses and offices are located in Houston, Dallas, New Orleans, Memphis, St. Louis, Kansas City, Wichita and Denver. Metal Goods came to Houston in 1936 and since then has expanded its facilities three times.

Modern materials handling equipment for the new warehouse will include two 5 ton and one 7½ ton overhead cranes, a special carry-crane with boom to handle stainless steel plates for unloading cars, and three fork lifts. A Trak-Rak crane will allow flat storage of skids of sheet to facilitate handling and reduce the possibility of damage.

PLANT PERSONNEL

Engineering-Management Promotions Announced by Major Southern Plants

James H. Tucker has been appointed Factory Manager of the new piano action factory being opened in Central, S. C. by **Pratt, Read & Co.**

Replacing **Hampton W. Campbell**, who has been appointed general manager of **Lynchburg Foundry Co.** of Lynchburg, Va., is **W. Edward Masencup, Jr.** Succeeding **Masencup** as manager of standards is **William S. Williams**.

Kenneth H. Wirth has joined **Copolymer Rubber & Chemical Corp.** of Baton Rouge, La. as Development Laboratory Supervisor.

Roy C. Hauck, formerly general manager of **Ingersoll Conditioned Air Division, Borg-Warner Corp.**, has been named president and a director of **The Southwest Manufacturing Co.** of Aurora, Missouri. **Leonard Bisby**, formerly chief engineer and plant manager for the company, has been promoted to vice president. **Curtiss Ginn, Jr.**, having served a dual capacity of president to Southwest and its mother company, **F. E. Myers & Bro. Co.**, is now chairman of the board of direc-

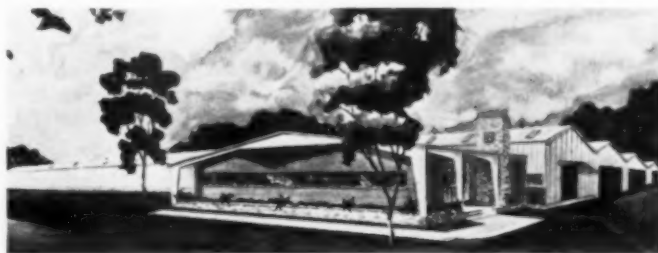
tors. **M. G. Moses** has resigned as vice president and general manager but remains as secretary-treasurer.

Chemstrand Corp.'s Acrilan acrylic fiber plant at Decatur, Ala. has made the following appointments: **L. D. Scott**, manufacturing manager; **A. A. Nellis**, superintendent, Quality Control; **N. C. Sidebotham**, superintendent, Process Improvement; **J. L. Bibb, Jr.**, superintendent, Personnel & Services; **R. O. Fleming**, Process Control superintendent; **E. A. Heckler**, Instruments superintendent; and **Paul Taylor**, Maintenance superintendent.

Several changes at the company's nylon plant at Pensacola, Fla. include: **L. E. Dequine, Jr.**, manufacturing manager; **L. F. Ray**, superintendent, Methods & Standards Dept.; **R. W. Towne**, superintendent production control; **W. T. Cline, Jr.**, textile yarn superintendent; and **J. B. Cole**, tire yarn superintendent.

Donald E. Lawson is now Asst. Resident Manager for engineering and maintenance at **Rayonier's** Jessup, Georgia mill, replacing **Earl Murphy** who was recently named Chief Engineer of Southeast Central Engineering Div.

James R. Havron is Asst. Plant Manager of **International Paper's** Natchez, Miss. plant, succeeding **Dave Wooten**, transferred to the Company's Georgetown, S. C. plant.



LOUISVILLE, KENTUCKY — This 53,500 sq ft combination office and warehouse building is being erected in Louisville, Kentucky for **Reynolds Aluminum Supply Company**, a Reynolds Metals Company subsidiary with headquarters in Atlanta, Georgia. **Harping Sales & Erectors, Inc.** of Louisville has the erection contract. **Reynolds Aluminum Supply Company** also operates metals and building materials warehouse facilities in Savannah, Miami, Raleigh, Louisville, Memphis, Nashville, Birmingham and has a sales office in Jacksonville.



In an average year, Beacon Coal shipments are transported by over half the Class I railroads in the nation . . . reach customers in over half the states . . . are transshipped via Great Lakes, coastwise, and export. You can always be sure that *your* shipments will be moved and delivered promptly.

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EASTERN GAS AND FUEL ASSOCIATES

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For New England: New England Coal & Coke Co.; For Export: Castner, Curran & Bullitt, Inc.

News of the South-Southwest — more power . . . more plants . . . more money

Hall Lamp Co. — N. C.

C. M. Hall Lamp Company, manufacturers of automobile and truck lights of Detroit, Mich., has leased a recently built one-story building with 62,500 sq ft in Charlotte, N. C. from the Clinton Development Corporation. Several hundred are employed in the manufacturing operations.

\$20 Million Miss. Chem. Investment in Yazoo City by '59

A new \$2 million urea plant is being constructed by **Mississippi Chemical Corporation** at Yazoo City, Miss. New facilities, to be completed in late '59 will provide approximately 100 tons a day of solid urea in addition to making available high nitrogen liquid fertilizers for direct application.

The additional facility will increase the plant investment at the Yazoo City operations to approximately 20 million dollars.



KNOXVILLE, TENN. — With an average lift of more than 7,600 lb, this Lorain Crawler Crane makes short shift of a load of peeled oak pulpwood at **Southern Extract Company's** yard in Knoxville, Tenn. Equipped with a 75 ft boom and a Robinson Dream Sling, the crane keeps a fleet of log-filled trucks rolling.

Saco Lowell Moves to South

Saco Lowell Shops is moving all of its textile machinery manufacturing to the South — a small part of it to Sanford, N. C. The major part is directed at the new plant at Easley, S. C. which contains 26,000 sq ft of space, plus a basement, and amounts to an expenditure of approximately \$250,000.

Mobile Home Plant for Columbus, Ga.

The \$300,000 mobile home fabricating plant at **Liberty Coach Co.** at Columbus, Georgia is expected to be in production early in '59. Operation, a division of the Company's Bremen, Indiana plant, will employ around 250.

\$3 Million Lab for Texas Instruments

Award of a contract for constructing a 78,500 sq ft building to house the Central Research Laboratory of **Texas Instruments Incorporated** to Robert E. McKee General Contractor, Inc., has been announced.

The building will be the second in a group to be erected on TI's 300-acre North Central Expressway site in Dallas, Texas and will be located near the recently-completed TI Semiconductor-Components division manufacturing plant. It will cost approximately \$3,000,000 exclusive of the land.

Upon completion of the building early in 1959, the Central Research activities will be moved from the Lemmon Avenue plant, thus freeing that building for complete occupancy by the Apparatus division with which it now is shared.

Architects for the new laboratory are O'Neil Ford of San Antonio and Richard Colley of Corpus Christi, with A. B. Swank, Dallas, and S. B. Zisman, San Antonio. They designed the new 310,000 sq ft Semiconductor-Components division plant which was dedicated last June.

Newman, Tex. — El Paso Electric's new \$11 million, 80,000 kw plant, now under construction, is scheduled for mid-1960 operation. Ultimate capacity will probably be 400,000 kw.

Ashburn, Ga. — The new \$350,000, 43,000 sq ft pajama manufacturing plant of Manhattan Shirt Co. is now in full production.

Oklahoma City, Okla. — Spring of '59 is estimated completion date of new 16,000 sq ft office building for Allied Material Corp.

Springdale, Ark. — New 50,000 sq ft poultry processing plant of Wilson & Co. will be open for operations in early '59.

Charlottesville, Va. — \$625,000 facility, being built by English Construction Company for Virginia Electric and Power, will house

western division offices, shops and service facilities.

Chillicothe, Mo. — 46,000 sq ft manufacturing plant is under construction by Donaldson Co., Inc., St. Paul, Minn. manufacturer of industrial air cleaners and mufflers. Plant will cost about \$275,000 with equipment and tools representing an additional \$300,000 investment.

South Boston, Va. — White House Milk Co. (A&P subsidiary) has taken over the Coble Dairy Products Cooperative plant to manufacture evaporated milk. New equipment is being installed with production scheduled for late '58.

Kansas City, Mo. — \$1 million, 112,000 sq ft manufacturing plant of KW-Dart Truck Co. under construction in the Northeast Industrial District will be in late '58 production of off-highway hauling trucks and custom built vehicles.

Engineered for Tampa Electric



Peninsular
Florida's
first
modern
coal-fired
power
station

On land reclaimed from Tampa Bay, Stone & Webster Engineering Corporation has designed and constructed Tampa Electric Company's Gannon Station. Here, following extensive cost comparison studies, coal is being used for the first time in an area previously utilizing oil. Stone & Webster is now at work on Gannon's Unit #3 which, when completed in October, 1960, will bring gross plant capability to 456,000 kw.

Stone & Webster Engineering Corporation is proud of its world-wide reputation for creating such low installation and operating cost designs — and of its long history of successful engineering in many industrial fields on jobs of varied size and complexity. For help on your next engineering project simply call our nearest office.

Stone & Webster builds installation and operating savings into your project through engineering economies and extra plant efficiency.

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Boston 10, Massachusetts

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208 South LaSalle Street
Telephone RAndolph 6-4634
Chicago 4, Illinois

CINCINNATI

913 Dixie Terminal Building
Telephone DUnbar 1-1325
Cincinnati 2, Ohio

CLEVELAND

Room 722,
The Illuminating Building
Telephone MAin 1-7960
Cleveland 13, Ohio

DETROIT

1514 Back Building
Telephone
WOodward 1-2340 or 1-2341
Detroit 26, Michigan

ST. LOUIS

2029 Railway Exchange Building
Telephone MAin 1-1160
St. Louis 1, Missouri

WINSTON-SALEM

1105 Reynolds Building
Telephone PArk 2-7116
Winston-Salem 1, North Carolina

Economy-minded plant managers, keeping an eye on ever-rising production costs, want more steam per dollar's worth of fuel. Many of them are achieving this goal through modernization of coal-burning equipment and scientific selection of coal to do a specific job.

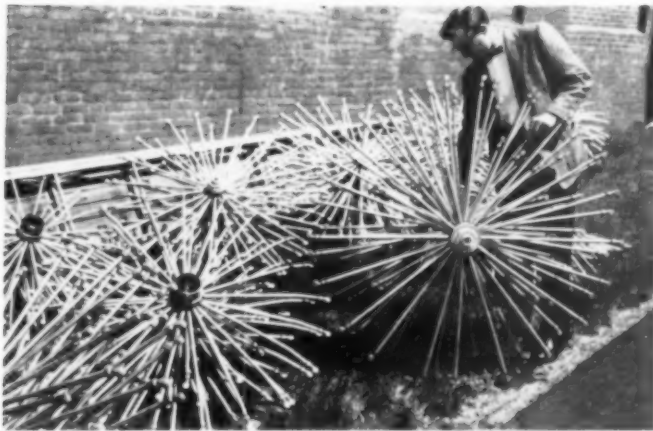
Such projects are in the regular order of business of Norfolk and Western combustion engineers, and their assistance on any coal utilization problem is available without obligation.

These experienced men will be glad to provide technical advice and information in regard to your coal-burning operation . . . ranging from the selection of the best *Fuel Satisfaction* coal for your particular firing job to comparative fuel cost surveys. Let them help you gain *maximum results at minimum cost!*

Fuel Satisfaction is the name given the many fine brands of superior all-purpose Bituminous Coal mined along the N&W.

**Norfolk and Western
RAILWAY**

CARRIER OF FUEL SATISFACTION



THESE SPIDERY FIGURES may look like giant fluffs from cottonwood trees, but actually are spray assemblies used in new industrial air conditioning units made by Carrier Corporation. Harry Barbrey, air conditioning engineer for Woodside Mills, a textile plant in Greenville, S. C., inspects them prior to installation. The sprays set up a small hurricane which cools and cleans the air — removing lint and other airborne particles. The air is then delivered to the manufacturing areas.

FUTURE EVENTS of Engineering Interest

Oct. 6-10: Southern Textile Exposition: Textile Hall Corp.; Textile Hall, Greenville, S. C. H. H. Lesesne, 434 Palmetto State Life Bldg., Columbia 1, S. C.

Oct. 9-10: 21st Annual Joint Solid Fuels Conference, ASME-AIME, Hotel Chamberlin, Old Point Comfort, Va. Carl S. Dennis, Chm., Va. Section, ASME, The Chesapeake & Ohio Railroad Co., Richmond, Va.

Oct. 13-15: National Electronics Conference, 14th Annual Forum on Electronic Research, Development, and Application, Hotel Sherman, Chicago, Ill. Arthur H. Streich, Gen. Mgr., NEC, Inc., 84 East Randolph St., Chicago 1, Ill.

Oct. 14-16: 13th Annual Exposition, Society of Industrial Packaging & Materials Handling Engineers, Coliseum & Morrison Hotel, Chicago, Ill. G. Cornwall Spencer, 327 S. LaSalle St., Chicago 4, Ill.

Oct. 20-21: Southeastern Electric Exchange, Engineering & Operation Section, Hotel Roanoke, Roanoke, Va.

Oct. 20-24: South Central Region Annual Conference & Exhibition, National Association of Corrosion Engineers, Roosevelt Hotel, New Orleans.

Oct. 23-25: Mid-America Minerals Conference, American Institute of Mining, Metallurgical, and Petroleum Engineers, Chase & Park

Business Incorporations up down South

Perhaps one of the best gauges of business sentiment regarding Dixie economy is the 5.8% increase in Southern business incorporations which was recorded in 1957 over 1956.

Full impact of this faith in the future is felt when contrasted with a national average which showed a 4.1% loss.

TEXAS PLANT FOR MICRO-LUBE

Micro-Lube Sales, manufacturers for the nationally distributed Micro-Lube automotive additive, has purchased a 175 by 300 plot of property in the Brook Hollow Industrial District in Dallas, Tex. upon which to build a new home office and manufacturing facility.

Plans are to construct in the very near future a one-story, steel and brick building containing 12,800 sq ft. Offices will require some 3,000 sq ft and the remainder will be used for manufacturing and warehousing of Micro-Lube. George Harrell, Harrell and Hamilton of Dallas is the architect.

Plaza Hotels, St. Louis, Mo. Society of Mining Engineers of AIME, 29 West 39th St., New York 18, N. Y.

Oct. 27-31: 40th Annual National Metal Exposition & Congress, American Society for Metals, Public Auditorium, Cleveland, Ohio. ASM, 7301 Euclid Ave., Cleveland 3, Ohio.

Nov. 6-7: 7th Annual Instrumentation Conference; School of Engineering, Louisiana Polytechnic Institute, Ruston, La. Stewart Baggarly, Publicity Chairman.

Nov. 20-21: Electronic Computation Conference, American Society of Civil Engineers, Kansas City, Mo. ASCE, 33 West 39th St., New York 18, N. Y.

Dec. 1-3: Semi-Annual Meeting, American Society of Refrigerating Engineers, Hotel Roosevelt, New Orleans, La.

Dec. 1-5: 23rd National Exposition of Power & Mechanical Engineering, American Society of Mechanical Engineers, New York Coliseum, New York, N. Y. E. K. Stevens, Pres., International Exposition Co., 480 Lexington Ave., New York 17, N. Y.

Caterpillar



makes tracks for coal

Seven Caterpillar Tractor Co. plants burn coal for low-cost steam generation

When seven plants of a company all burn coal—over 250,000 tons a year—you can be sure there's a good reason. At Caterpillar Tractor Co., where steam is used for both process work and heating, coal is burned for low-cost, efficient steam production.

Because of its importance at Caterpillar, steam generation must meet the same standards of efficiency and dependability set up for all phases of plant production. As Caterpillar has expanded from one plant to many, therefore, *each* plant has burned coal.

Facts you should know about coal

You'll find that bituminous coal is not only the lowest-cost fuel in most industrial areas but up-to-date coal burning equipment can give you 15% to 50% more steam per dollar. Today's automatic equipment can pare labor costs and eliminate smoke problems. And vast coal reserves plus mechanized production methods mean a constantly plentiful supply of coal at stable prices.

Technical advisory service

To help you with industrial fuel problems, the Bituminous Coal Institute offers a free technical advisory service. We welcome the opportunity to work with you, your consulting engineers and architects. If you are concerned with steam costs, write to the address below. Or send coupon below for our case histories booklet, complete with data sheets. You'll find it informative.

Consult an engineering firm

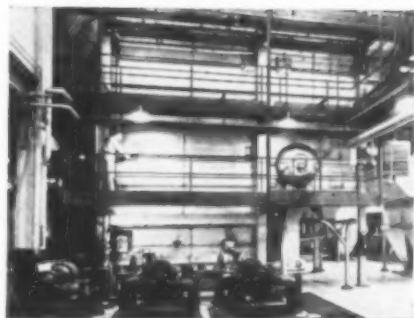
If you are remodeling or building new heating or power facilities, it will pay you to consult a qualified engineering firm. Such concerns—familiar with the latest in fuel costs and equipment—can effect great savings for you in efficiency and fuel economy over the years.

BITUMINOUS COAL INSTITUTE

Department SP-10,

Southern Building • Washington 5, D. C.

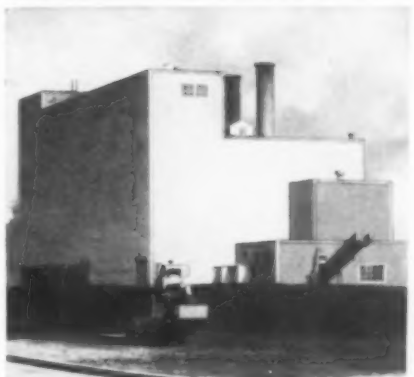
Power house at Morton, Ill. plant uses two 60,000 lb/hr Wickes boilers, 3 stories high. These are equipped with Hoffman continuous ash-discharge spreader stokers.



Track unloading hopper at York plant. Coal feeds from belt conveyor to bucket conveyor to distributing flight conveyor over storage bunker. Coal handling system by Beaumont Birch.



Exterior view of power plant at Joliet, Ill. Foreground shows part of outside coal storage area featuring portable car unloader and stacker. Coal is stocked out and reclaimed by Caterpillar bulldozer-equipped crawler tractor.



SEND COUPON FOR NEW "Guide Specifications for Underfeed Stoker Fired Low-Pressure Commercial Heating Plants." Heavy demand for the first edition of this booklet, adaptable for design loads 3,000 to 26,000 EDR steam, has justified an expanded edition covering application of underfeed stokers to firetube, watertube and section cast iron boilers. Complete specification criteria cover all aspects of typical heating plant.

☐ Guide Specifications booklet ☐ Case histories on larger plants

Name _____

Title _____

Company _____

Address _____

City _____

Zone _____

State _____





Orville L. Welsh ASST. CHIEF ENGINEER, CONTINENTAL BAKING CO.



"Experience proved to us, Fusetron Fuses could save us money and provide safer protection." . . . Orville L. Welsh

ASST. CHIEF ENGINEER
CONTINENTAL BAKING CO.
TOLEDO, OHIO

CASE 1

"A refrigeration compressor of ours was frequently being shutdown because the 60 amp. protection we used just could not hold the starting currents.

"After reading over Fusetron dual-element fuse literature sent to us by our company headquarters, we tried them out with great success. In the past twelve months, we have not had to go near the switch or open its cover.

CASE 2

"In another case, Fusetron fuses saved us a considerable amount of money. We installed 600 ampere Fusetron fuses in parallel in our 1200 ampere entrance switch, rather than using the more expensive mechanical type of protective device.

"Personally, I am confident we now have better protection than we could have had with other types of protective devices."

Here's why FUSETRON dual-element fuses provide safer, more dependable and money-saving protection . . . FUSETRON dual-element fuses provide 10 point protection against electrical troubles. This is unlike circuit breakers or ordinary fuses which, except in rare cases, protect only against short-circuits.

IN ADDITION:

Fusetron fuses require no maintenance or recalibration. They are calibrated at the factory by engineers. Once properly installed, they require no inspection or down-time necessary on mechanically operated devices. There are no hinges, pivots or contacts to stick or get out of order. Dust, corrosion or oxidation cannot increase a Fusetron fuse's capacity or lengthen its blowing time.

After years of inactivity, a Fusetron fuse will give the same safe, dependable protection if called upon to open as it would have on the day it was installed.

Fusetron fuses have high interrupting capacity. FUSETRON fuses can safely interrupt severe short-circuit currents and are adequately safe to meet future circuit growth.

Fusetron fuses save on installation costs. Because their long time-lag prevents them from opening needlessly on motor starting currents or other harmless overloads, Fusetron fuses can be installed in sizes to approximate the load current. This protects against waste of space and money by permitting use of proper size switches and panels.

Why Risk Losses! One needless shutdown . . . one lost motor . . . one destroyed switch or panel . . . one burned out solenoid . . . may cost you far more than replacing all other types of protective devices throughout the entire installation with Fusetron dual-element fuses.

For Loads above 600 and up to 5,000 amps . . . Use BUSS Hi-Cap Fuses. They have an interrupting capacity sufficient to handle any fault current regardless of system growth.

They can be coordinated with Fusetron fuses on feeder and branch circuits to limit fault outages to circuit of origin.

for more information write for }

BULLETIN FIS on Fusetron fuses.

BULLETIN HCS on BUSS Hi-Cap fuses.

for safe, modern money-saving protection install
FUSETRON dual-element FUSES and BUSS Hi-Cap FUSES
throughout entire Electrical System!

BUSSMANN MFG. DIVISION, McGraw-Edison Company University at Jefferson, St. Louis 7, Mo.



\$25 MILLION FLORIDA PLANT FOR CYANAMID

American Cyanamid Company's \$25 million Santa Rosa Plant near Pensacola, Florida will soon be in commercial production of Creslan acrylic fiber. Operating staff is underway on start-up operations and output will gradually be increased until the plant reaches its full annual capacity of 27 million pounds of Creslan staple and tow. The Florida operation will employ over 400.

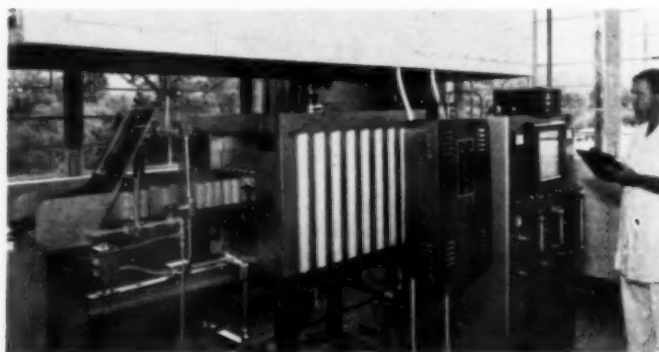
The giant Santa Rosa plant, on the eastern shores of Escambia Bay about 20 miles from Pensacola, is on a direct line of supply from Cyanamid's source of acrylonitrile, principal raw material of Creslan, to the leading textile centers. The company's Fortier Plant, near New Orleans, is the nation's largest production facility for acrylonitrile.

HUGE MICA DEPOSIT SUPPLIES IMC's TENNESSEE PLANT

Mica-Bearing Silt of Davy Crockett Lake Pumped Into Plant

With completion of an expansion program to provide additional grinding capacity, **International Minerals and Chemical Corporation's** plant on Davy Crockett Lake near Greeneville, Tennessee has jumped production potential from a pilot plant stage of 24 tons to 120 tons of flake mica a day.

The plant draws from a source of supply unlike any other in the mica-producing industry, a deposit of mica-bearing silt that has been accumulating for over 50 years in a five-mile delta in Davy Crockett Lake about six miles upstream from the Tennessee Valley Authority's Nolichucky Dam. It has been estimated that the mineral-bearing deposit, over 40 ft thick in places, contains more than a half million tons of commercial mica.



CHATTANOOGA, TENNESSEE — At American Lava Corporation's new Chattanooga nuclear fuel plant for the mass production of custom-made ceramic fuel elements, formed pellets are shown entering the high temperature, atmosphere-controlled kiln. Compounded of urania or urania-thoria mixtures, pellets ranging from 1/8-in. to one-inch diameters can be produced. American Lava is a subsidiary of Minnesota Mining and Manufacturing Co.

Since the average mica deposit is a relatively small one, exhaustible within 2 to 6 years, users of mica have been plagued by frequent shut-downs in the industry and resultant shortages which, in turn, have caused sharp price cycles and, in some cases, a search by users for substitutes which might be inferior to mica but in more dependable supply.

Completed in 1957 and representing a total investment of more than half a million dollars, the plant is an answer to the industry's need for a completely dependable production facility operating at low cost from an almost inexhaustible raw material supply.

Believed to be the only operation in which mica has been commercially recovered from river silt, IMC's Davy Crockett dredging operation is the result of several years' careful development.

The company spent a year perfecting means of dredging, screening, and separating the mineral. A specially-constructed \$30,000 dredge, brought to the lake in parts, sucks up the silt — mostly under water — and feeds it into a conduit which carries the fluid material to the processing plant. The flotation recovery system in use employs chemical agents which attach air bubbles to the mica so that it will float free of the decayed leaves and other waste materials.

Ferro — Nashville

A one-half million dollar expansion program to provide increased facilities for two **Ferro Corporation** operations has been announced. Scheduled for expansion are the firm's Brazilian subsidiary, Ferro Enamel S. A., Sao Paulo, Brazil, and the Ferro Fiber Glass Division located in Nashville, Tennessee.

The Nashville Fiber Glass plant completed a one and one-half million dollar expansion program late last year. It is the world's only completely integrated fiber glass plant capable of producing finished plastic-reinforcing fiber glass textiles from basic raw materials.

Sealy Mattress Buys Memphis Ford Plant

The **Sealy Mattress Company** of Memphis, manufacturers of Sealy bedding and convertible sleeping equipment, has announced the purchase of all buildings and land of the Ford Motor Company assembly plant in Memphis, Tenn. Premises provide square footage of roughly two and one-third times the size of floor space now occupied by Sealy and includes the entire Ford plant. (More News Page 108)

"CHARTS"

By **SOUTHERN POWER & INDUSTRY** gives quick solutions for everyday problems.

Designed specifically to serve the needs of Southern engineers, operating officials, department heads and maintenance foremen. Note the Wide Range of Subject Matter:

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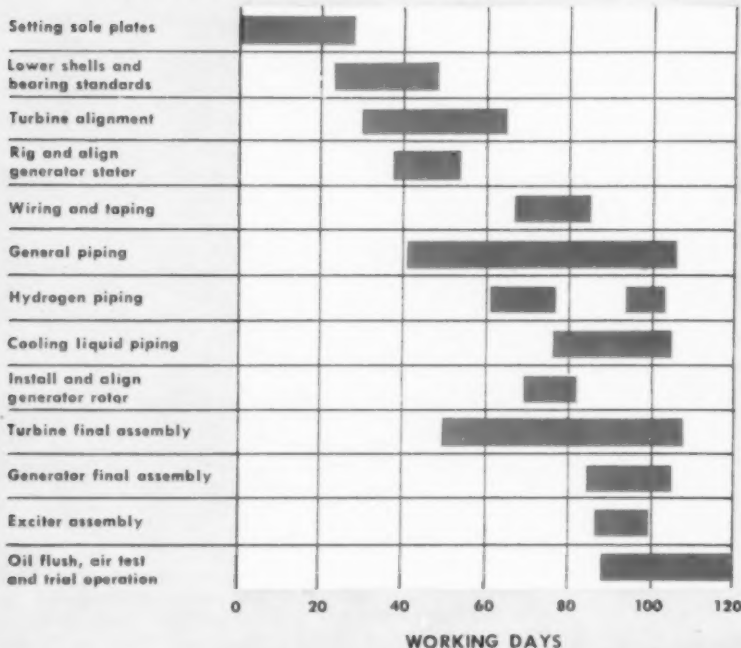
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PLANNED INSTALLATION SCHEDULE OF
STEAM TURBINE-GENERATOR WITH LIQUID-COOLED STATOR

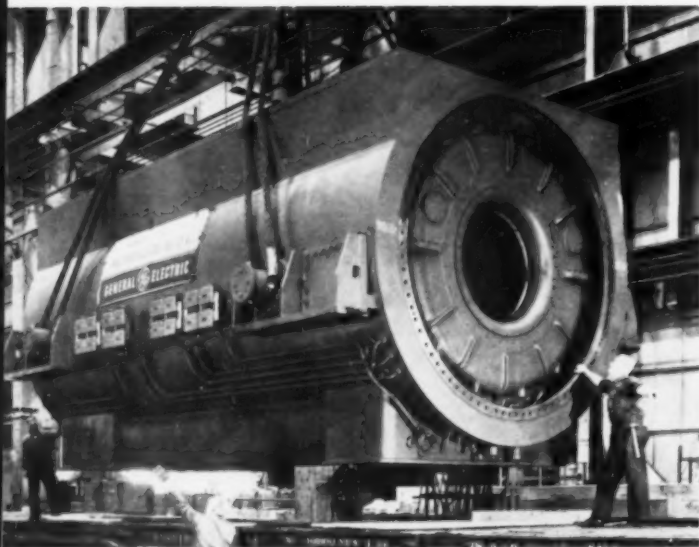


INSTALLATION TIME of liquid-cooled generators approximates time cycles established for conventionally-cooled units. Because of the simplicity of these units, no special assembly techniques are required.

INSERTION OF ROTOR into liquid-cooled stator is accomplished with the same ease as for conventionally-cooled units.

WITH HIGHER RATINGS NOW POSSIBLE FOR GENERAL ELECTRIC GENERATORS...

Simplicity of direct cooling components



A SINGLE CRANE LIFT can handle this typical 291,000 kva liquid-cooled generator stator. The smaller size and lighter weight of these units are important shipping and installation considerations.



SINGLE-STAGE, AXIAL-FLOW FAN, inner end shield and fan nozzle ring are quite accessible. Complicated end shields and multi-stage fans are not needed on liquid-cooled generators.



speeds assembly, increases availability

SINGLE-STAGE, LOW-PRESSURE FAN ASSEMBLY IMPROVES ROTOR ACCESSIBILITY

The successful application of liquid cooling to generator stators has made possible tremendous increases in unit ratings—yet, with all their advantages, these generators have retained the basic design simplicity found in conventionally-cooled units.

Rotor assembly, for example, is considerably simplified for these higher-rated units. Since liquid cooling eliminates requirements for multi-stage fans and complicated end-shield assemblies, labor assembly costs and inspection downtime are reduced.

Equally important, the increased output possible with liquid cooling means that, on a per kw basis, components are relatively smaller and weigh less. This consideration reflects savings in shipping and handling costs and supporting foundation mass.

Ease of assembly and disassembly is just one of the many important advantages of General Electric liquid-cooled generators. Other outstanding features are:

Increased Generator Output—Hollow-strand stator bar construction can remove up to 16 times more heat than conventional cooling arrangements, permitting higher generator ratings.

Improved Performance—Liquid cooling permits automatic regulation of stator winding temperature independent of load.

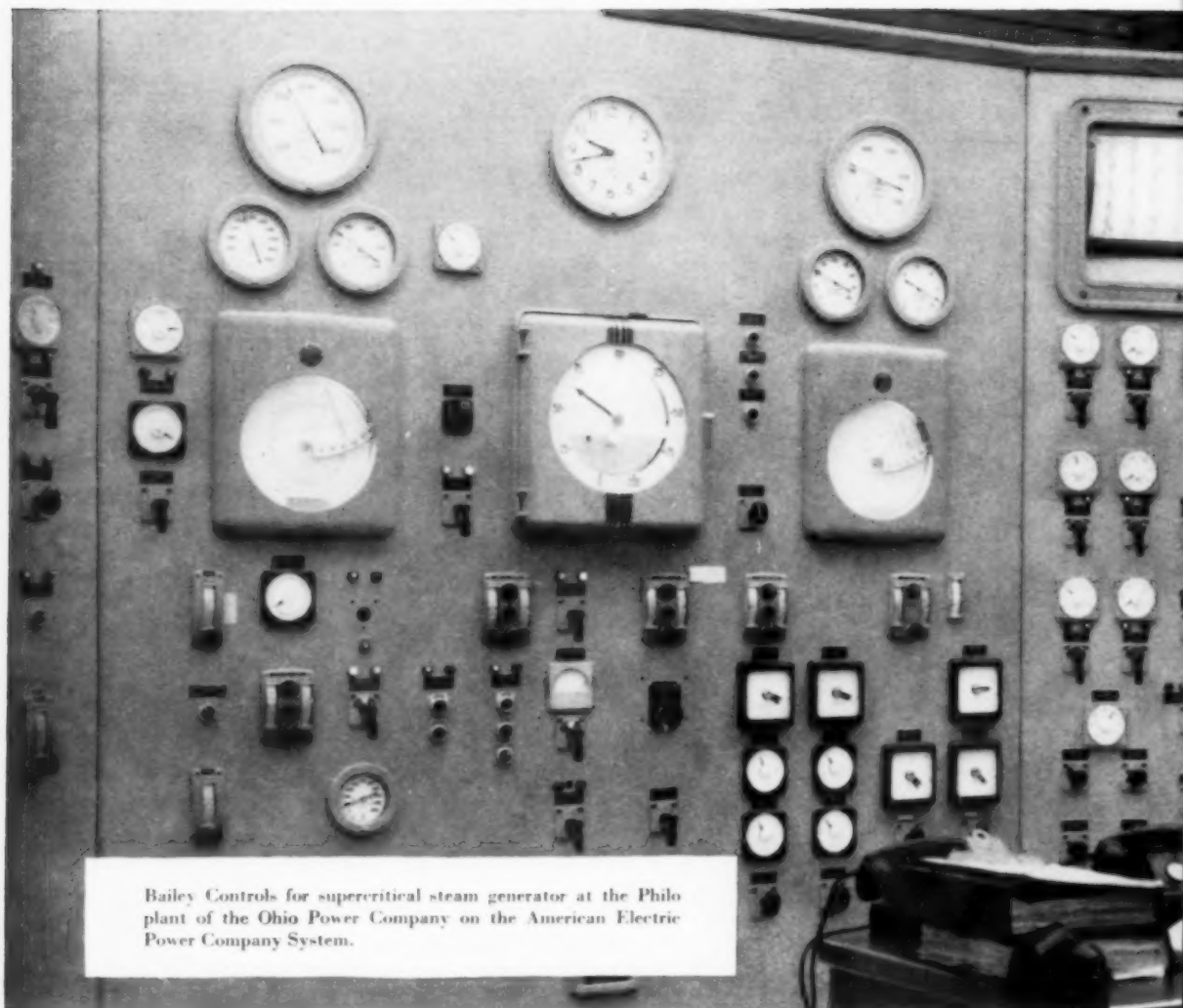
Dependable Operation—Many unique features are incorporated into the design of the closed coolant system to provide a permanently tight liquid circuit.

Design Simplicity—Dielectric system maintains the simplicity and dependability of conventionally-cooled machines.

For more information on liquid cooling, contact your nearest Apparatus Sales Office or write to Section 254-73 for bulletin GER-1231, Large Steam Turbine-Generator Department, General Electric Company, Schenectady 5, New York.

Progress Is Our Most Important Product

GENERAL  ELECTRIC



Bailey Controls for supercritical steam generator at the Philo plant of the Ohio Power Company on the American Electric Power Company System.

Bailey pioneers the control of...

This is the control center for the first commercial supercritical pressure, steam-electric unit in America. It went into operation March 20, 1957. Tests made during the first year of operation indicate that this new high pressure unit, with Bailey Controls, is establishing new efficiency records in the conversion of coal to electricity.

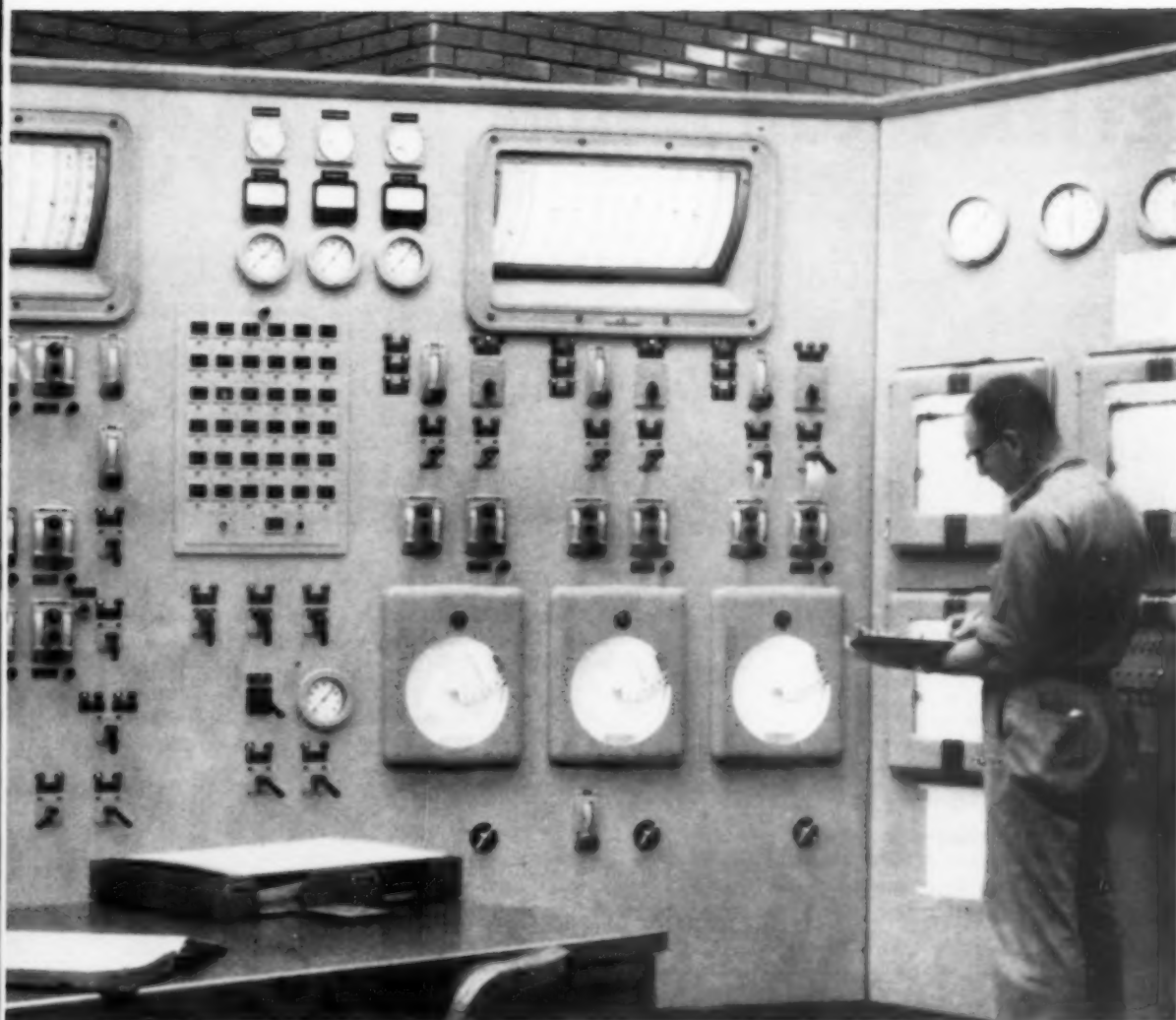
How it works

"Once-through" steam generating units must have radically different control systems from those used on drum-type boilers. At Philo, for instance, the Bailey Control for the 4500 psi, 1150F unit, maintains the desired rate of steam generation by means of a feed water flow controller which regulates feed-pump speed.

In normal operation this controller is set for a constant rate, and boiler outlet pressure is held to the desired value by automatic regulation of the turbine control valves.

An alternative operating method uses the turbine speed governor to regulate turbine control valves and varies feed water flow to maintain boiler outlet pressure.

With either method firing rate is varied to maintain final steam temperature. The Bailey System does this by regulating coal and air in parallel, primarily from changes in feed water flow with secondary adjustments, when necessary, from steam temperature.



SUPERCritical STEAM PLANTS

Optimum combustion conditions are maintained by Bailey Oxygen-Combustibles Recorder-Controllers which continuously sample exit gases from each cyclone and automatically adjust coal feeder speeds.

Seasoned Engineering Experience

For greater fuel savings, less outage and safer work-

ing conditions, you owe it to yourself to investigate Bailey Controls. And, for your convenience (and to save time and travel expense) there's a Bailey District Office or Resident Engineer in or close to your industrial community.

Arrange to visit a nearby Bailey installation. We stand on our record.

A135-2

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BETTER PRODUCTION



Tips on Planning Plant Modernization

MODERNIZING? Unless you approach a modernization or expansion program on a planned basis, the result is likely to be needless duplication of facilities, excessive construction and operating costs, lack of coordination between old and new facilities and resultant loss of production, and overlooked opportunities for savings in time, labor and equipment.

To aid management make an orderly investigation of modernization needs, the following tips are offered by *Walter Kidde Constructors, Inc.*, engineers and builders.

1. **Determine production quotas.** Decide what products should be dropped, retained, modified, added. Estimate how much of each product should be manufactured.

2. **Analyze products and their components:** Determine what product components should be manufactured and what should be purchased. Should components now purchased be manufactured or vice versa?

3. **Look into production facilities.** What equipment and processes should be modified or scrapped? What new equipment should be purchased? What processes should be introduced.

4. **Prepare the optimum layout.** What is the best layout for plant facilities in the modernized plant?

1. Production Quotas

Require all major departments to submit to management, in writing, detailed data on their operations. For example, the sales, marketing and distribution departments should report on the volume of products shipped in previous years, orders lost in the past because of slow deliveries, or any other reason stemming from internal company operations. They should forecast sales of current products and also estimate the volume of new and/or improved products

that could be effectively sold with the existing line.

The cost accounting department should report on profit or loss and also overhead cost attributable to each product in the previous year. Other vital information needed includes anticipated added profits to be realized by filling all lost orders, new orders to be obtained on the basis of the sales forecast, and orders for proposed new and/or improved products.

An evaluation of how new manufacturing techniques could increase profits should be prepared by the engineering department. If necessary, they should prepare a cost estimate for new equipment required to produce suggested new and/or improved products.

With these three reports, management can then decide what products to add and scrap, and also determine reasonable product quotas.

2. Products and Components

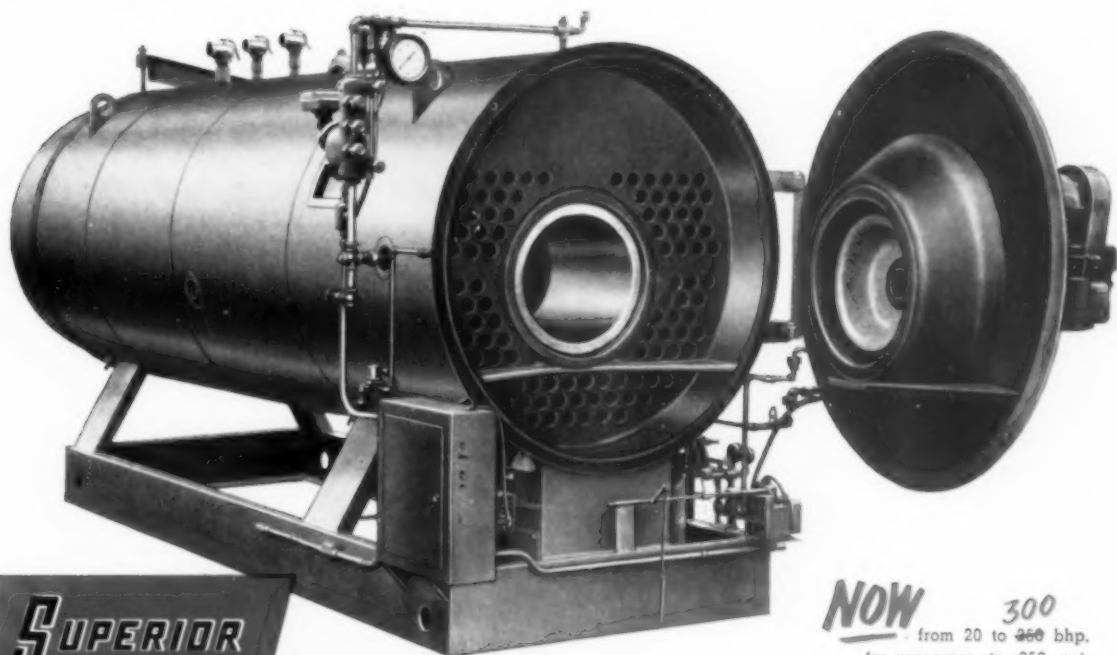
Require the production department to submit a report listing component parts for the manufacture of each product, as determined by the previous analysis. Have them calculate the total number of components required monthly or annually and require them to designate which components should be manufactured and which purchased. A joint report should also be prepared by the production, engineering and purchasing departments which evaluate savings possible by manufacturing rather than purchasing, and vice versa.

With these reports, management can figure total manufacturing capacity required. And by subtracting existing capacity, they can easily see how much new space and equipment must be provided.

3. Production Facilities

At this point in modernization planning, a

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combined with accessibility and easy maintenance**

With a full 5 sq. ft. of heating surface per bhp., 4-pass, down-draft design, and built-in induced draft, the Superior COMPACT is a highly efficient and dependable package. Its efficiency, guaranteed by factory-fire-test of every unit, insures years of economical performance; for the Superior COMPACT is planned for the easy maintenance which sustains high efficiency.

Front doors are hinged, and rear doors hinged or

clavited to simplify inspection and cleaning. But note that no belts or mechanical components are located inside the front door where they would be subject to the heat of the fire. All units firing #4, #5 and #6 oil are equipped with dependable Superior Rotary Burners. High in the shell, and protected by the tubes of the fourth pass, the furnace is away from the "danger zone" eliminating the possibility of bagging or blistering.

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from 20 to ~~250~~ bhp.
for pressures to 250 psi.
or for hot water.
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firing oil or gas or both.
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Plant Modernization Tips — Cont'd

flow sheet for the manufacture of each component can be prepared by the engineering department. This should include a complete description of the part, its manufacturing sequence, necessary equipment, handling and monthly volume. Meanwhile, engineering and production departments can investigate what operations can be combined on a single piece of equipment to save labor, what operations can be completely eliminated, revised, simplified or modified to cut waste, reduce labor and increase volume.

Armed with this cost-cutting data, management can determine what products can be feasibly incorporated into the modernization program. The next step is to call on the engineering department to revise its original operational flow sheet according to these decisions.

4. Optimum Layout

Final step is to establish the basic square footage of plant space required for the new facilities. This calls for another report from the engineering and production departments listing storage areas required after expansion for raw

materials, supplies and purchased parts. This report should also include a preliminary plant layout, using scaled templates or models of machinery.

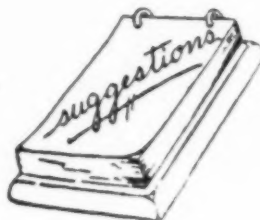
A good layout would have raw material areas close to point of use; it would assure that storage equipment permits simple, casual inventory control. Good layout places production equipment in operational sequence, recommends elimination of unnecessary handling, designs convenient location of tool rooms, locker and washrooms, maintenance shops, offices, truck docks and transformer stations.

But this is only a preliminary layout. It should be reviewed by other major departments, then revised and completed by adding details of size, headroom, overhead loads, power, steam, air and other service requirements.

Management now has a complete picture of the contemplated plant modernization. These data constitute a tangible and realistic economic justification for the investment which clearly indicates the rate of return which can be expected.

Successful Methods

"there is always a better way"



THE PRECEDING recommendations are essential to the general planning of any modernization program. The list of planning tips serves excellently as a spring board for leading into SPI's 11th Annual **BETTER PRODUCTION Issue**, because thorough overall planning is necessary to implement the many specific examples of improvement included in the following pages.

Engineering problems usually can be solved in several ways. The way selected depends on individual preference, as well as capital and operating cost. Each engineer in considering advantages of the proven procedures described in the following case studies should attempt by

association of ideas to evaluate other methods that seem worth investigating.

In fact, few, if any, of the solutions described are so good that they can't be improved. That is a prime benefit of studying this issue. Some procedures described may be adapted with little change, but in most cases several ideas will be subjected to the engineer's own improvements, and the final results will be better than the original developments.

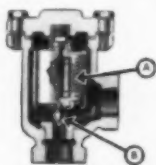
And above all — the many Better Production articles in this issue will go far toward helping SPI readers avoid having to say, "I never thought of that."

Full-range steam traps cut high cost of steam pressure variations

By John W. Ritter, Test Engineer
SARCO Company, Inc.

While boiler room economics dictate that boiler pressures remain constant, the equally sound economics of batch processing may decree that pressures at the equipment vary with the requirement of the process. The attempt to choose a steam trap that is all things to all conditions may result in installing traps that operate inefficiently at either extreme of their pressure range or that require adjustment every time the operations sheet calls for another pressure-temperature setting. Orifice traps represent a somewhat more rational approach to the problem, but often at the price of a continuous discharge of steam, particularly at the low pressures of start-up and shut down. Compromise, adjustment, and steam waste all spell inefficiency in the utilization of steam.

Production-Planned steam trapping, on the other hand, improves efficiency by the use of properly designed and installed thermostatic steam traps. Such traps employ the expansion and contraction of a thermostatic element to operate the discharge valve.



In Sarco Thermostatic Steam Trap, element (A) expands at steam temperature to close valve (B), contracts to permit discharge of condensate.

In the Sarco "Balanced Pressure" Thermostatic Steam Trap a volatile fluid is sealed inside a metal bellows that opens or closes the valve as it contracts or expands with condensate temperature. Near steam temperature, evaporation of the fluid creates an internal pressure greater than steam pressure in the trap body, and the expanding bellows seats the valve. When the condensate cools, the element contracts and opens the valve.

It is evident that at steam temperature pressure inside the element is higher than steam pressure, no matter how the latter may vary. Thus, the trap compensates automatically for variations in pressure.

58108



Maintenance Crew:
This steam trap handles 0-300 psi;
No adjustment necessary!

Sarco "Balanced Pressure" Thermostatic Steam Traps cut trap maintenance costs and simplify parts inventory. Why? Because the same bellows, head and seat handle steam pressures up to 300 psi — without any need of adjustment for variations in load or pressure.

Other advantages: unmatched capacity/cost ratio (1" size discharges 9,650 lbs/hr. at 10°F below steam temperature, 125 psi). This trap can't air-bind and, when installed with free discharge, can't freeze.

Long life and reliable performance are assured by an exclusive Sarco process for fabricating the one moving part — the thermostat — and by steam-testing of every single trap at maximum rated pressure.

Write for "Literature Kit 1A" today. And remember, Sarco can give you impartial advice on *Production-Planned* steam trapping because...

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Case 1 — Alabama Textile Mill

Heat Exchanger

**Conserves Capital
Saves Coal
Improves Performance**

By W. C. SANDLIN

The Russell Manufacturing Co.
Alexander City, Alabama

SEVERELY COLD weather during December of 1957 brought into clear focus a problem which had slowly grown to serious proportions at the Russell Manufacturing Company of Alexander City, Alabama. This textile corporation's steady growth through the post-war years had finally placed upon the existing power plant a demand which it was unable to supply, and the mills were lacking the amount of steam necessary for proper and efficient operation. By running the boilers at continuous overloads of 8-10% during the most frigid days and nights, manufacturing operations were maintained; but top management was convinced that the situation had to be remedied before the fall of 1958.

Rather than face at that time the excessive capital outlay of installing an additional 100,000 lb/hr of boiler capacity, it was decided to accept a long standing recommendation of the Engineering Department for the installation of

a waste water to fresh water heat exchanger in the Bleachery Division. This exchanger, through its ability to extract a large amount of latent heat from the tremendous volume of hot waste effluent and transfer this saving to the boiler room in terms of a proportionate reduction in steam demand, seemed the most logical and economical step to take at that time.

Taken into consideration, also, were two other advantages by which the company stood to profit through such an installation.

First, and most obvious, was the direct savings in coal. This figure was predicted to vary from 9 tons per day in hot summer months to 15 tons a day when the winter temperature of incoming fresh water drops to 50 degrees Fahrenheit.

Second, was the assurance that the heat exchanger would help to provide at all times an adequate supply of hot water for the continuous wet process machinery

which utilizes, during a normal day of running, approximately 500,000 gallons of water at a temperature of 180 F.

The inability of previous facilities to provide the necessary amount of hot water had cost many hours of production time and had finally resulted in the extreme measure of piping 250 psi steam directly from the boilers into the 40,000 gallon, gravity feed hot water tanks atop the bleachery.

Opening of the three 2-in. steam lines on the demand of the hot water control unit for additional heat caused extremely heavy fluctuations in boiler loads, prevented the maintenance of constant pressures in the power house, and subjected the boiler controls to conditions for which they were not originally designed.

Exchanger Selection

At the time the decision to go ahead was reached there were two proposals on heat reclaimer units

OPPOSITE PAGE — When waste effluent temperature exceeds 120 degrees, this valve allows flow to enter the collection pit. A similar valve outside the building sends waste to the sewer if its temperature is below 120 F.

UPPER RIGHT — One Taylor two-pen recorder indicates fresh water temperatures before and after passing through the exchanger, and the other indicates waste water temperatures. The lighted schematic indicates valves' positions and operation of pumps.

LOWER RIGHT — Exchanger sections, showing constant velocity return bends. The indicating panel, described above, is at the far end.

in the hands of the Engineering Department. Both of the proposal units were designed by companies which had specialized in the manufacture of heat reclaimers for textile usage and both were guaranteed to deliver a certain number of Btu's per hour under the proper operating conditions and to remain free from stoppages despite the heavy lint and yarn accumulations which would necessarily result from the flow of bleachery waste effluent.

The proposal from the Applied Engineering Company of Orangeburg, South Carolina, was finally accepted because the units manufactured to this company's specifications appeared to be superior in design and fabrication, of much simpler construction, and considerably lower in price than those of the closest competition.

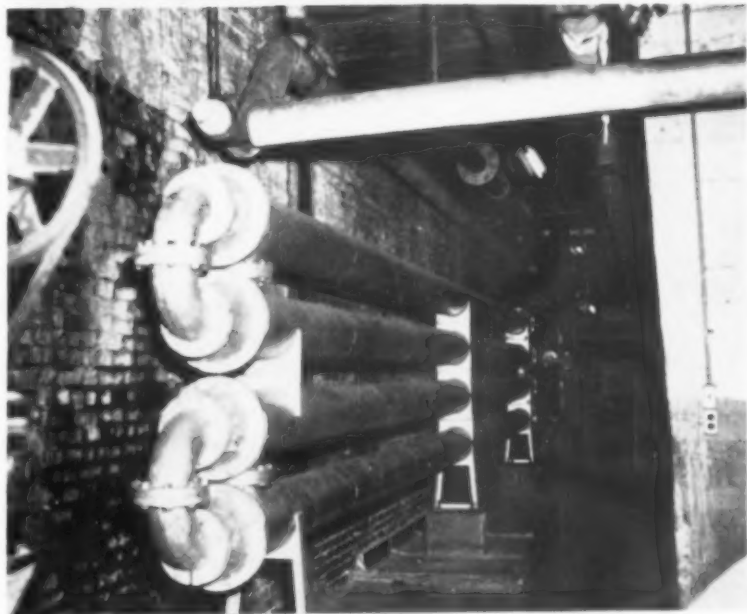
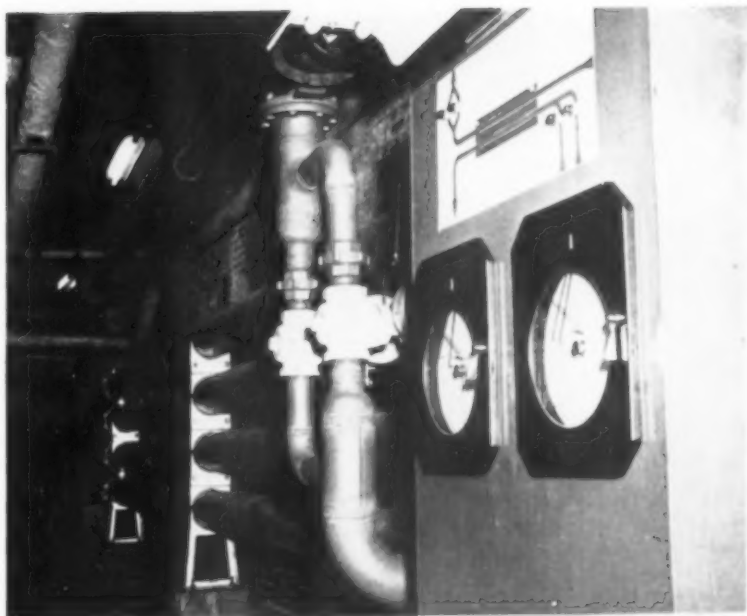
Applied Engineering Company designed the exchanger sections on the basis of the fresh and waste water flow rates provided them by the Russell Manufactur-

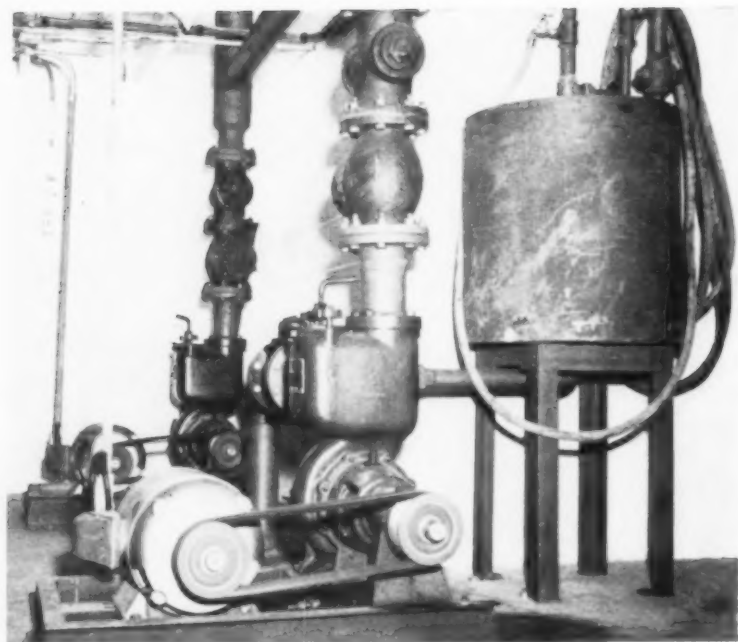
ing Company and had the tube sheets and shells fabricated by the R. D. Cole Manufacturing Company of Newnan, Georgia.

The heat exchange portion consists of four 9 $\frac{1}{4}$ in. diameter mild steel shells, 32 feet long. Each shell contains concentrically grouped bundles of Type 304 Stainless Steel tubing having an outside diameter of $\frac{7}{8}$ inch. Connecting U-bends are of an original design, for which a patent has been ap-

plied, and provide for constant velocity of waste water flow between the sections as well as through the tubes, thus eliminating any pockets of comparative stagnation wherein lint or contained sediments might settle and accumulate to cause restricted flow or complete stoppage of hot waste effluent.

A 6-inch DeZurik four-way valve, actuated by a timer controlled air cylinder, causes a





Interior of pump house showing two Gorman-Rupp, non-clogging, self-priming, trash type sump pumps. Intakes extend through floor into 22,000 gallon hot waste water storage pit. Steel tank holds chemical mixture used to clean exchanger tubes.

periodic reversal of waste effluent flow through the exchanger sections. This backflushing dislodges any lint deposits due to uni-directional flow, thereby assuring that no sizeable deposits of any kind are allowed to interfere with the proper passage of waste water through the exchanger.

Hot Waste Water

A careful analysis of the waste water system indicated that approximately 500 to 600 gpm of highly polluted water at temperatures of between 140 and 150 F could be obtained for heat reclaim purposes by making minor modifications to the original waste flow setup.

The ditches which channeled predominately cold waste flow were interconnected and piped to a point downstream from the intended intake of the waste water pumps. Predominately hot water from the mercerizer, the two bleaching ranges, and the knit goods washers was collected in the original waste water outlet ditch and piped to a 17' by 17' by 12' deep concrete pit which acts as

a collecting tank for hot waste effluent.

Water dumped from the six knit goods dye tubs, which may vary in temperature from as low as 50 to as high as 180 F, is checked for suitability by a thermally actuated switch and allowed to flow into the reclaimer ditch only if it is above 120 degrees. Colder water is channeled down a storm sewer. Another thermally actuated diversion valve monitors the flow of water from the main ditch into the waste water collection tank, thus insuring that no water under 120 degrees enters the tank to lower the mean temperature of the water accumulated there.

Demands and Controls

The instantaneous demand on the 40,000 gallon hot water storage and supply system may vary from as low as 75 gpm, when only one bleaching range is running, to as high as 300 gpm, when both bleaching ranges and the mercerizer are in full operation. For this reason the heat exchanger was designed to handle as high an average flow as 350 gpm and yet be

able to operate efficiently at much lower flow rates.

To accomplish this, the supply of fresh water through the exchanger can be varied by opening either or both 3-in. DeZurik cylinder operated valves mounted in parallel in the 5-in. supply line.

Water volume in the hot water storage tanks is divided into three levels of controls, monitored by three Photoswitch electronic level control units which utilize four stainless steel probes suspended from wires of different lengths.

Water level is automatically maintained in the uppermost control zone by the opening and closing of one of the 3-in. fresh water valves which, in turn, causes only one of the two waste pumps to operate. If this volume of flow proves insufficient, the tank level will fall into the second control zone and open the other 3-in. fresh water valve, simultaneously starting the second waste pump to supply the needed volume of waste effluent to keep fresh water temperatures as high as possible.

In the event that both fresh water valves are incapable of supplying the demand, the tank level will fall into the third control zone and the 4-in. valve on a separate cold water supply line will open and dump cold water directly into the hot water tanks. The third control zone is considered to be an emergency measure and will operate only in the event of a malfunction in the heat exchanger supply system.

By employing the large capacities of the fresh and waste storage tanks in the above manner, the control system provides the flexibility necessary to balance the flow of fresh water against the flow of waste water and yet maintain the flow volumes essential to efficient heat exchange.

Also incorporated in the control system is the means by which the heat exchanger can be made to operate as the secondary supplier of water to the storage tank while primary responsibility is switched to another smaller heat exchanger which removes the heat of chemical solution resulting from the dilution of caustic soda as it is removed from tank cars and pumped into storage.

This transfer of primary control responsibility is accomplished by the actuation of a toggle switch located on the master control panel. A similar switch allows the heat exchanger to be bypassed entirely and completely inactivated electrically while level in the tank is maintained automatically by the flow of fresh water from an entirely different source.

The front of exchanger control panel shows a lighted flow schematic. Operation of valves and pumps is indicated by colored pilot lights as are the various control levels as they exist in the hot water tanks. Lights above and below the two toggle switches on the panel indicate whether the exchanger is operating normally or being bypassed, and whether the caustic unloading operation or the heat

exchanger is being given precedence in keeping the hot water tanks full.

For ease of maintenance and simplicity of wiring, the control system utilizes seven 24 volt, a-c, three-pole, double-throw relays which mount in standard sockets for quick removal in case of failure. The sockets are mounted on aluminum racks which can easily be tilted through an arc of 90 degrees for quick access to the wiring underneath. Spare Potter & Brumfield relays and spare electronic tubes for the Photoswitch level control units are kept within the control cabinet for convenience to repairmen.

Performance

Although this heat exchanger has been in operation only a short

period of time, every present indication is that it will perform exactly as designed.

The approach of the outgoing fresh water temperature to that of the incoming waste water temperature is several degrees closer than was expected, indicating that exchanger efficiency is running higher than was predicted.

Boiler loads have dropped sharply and smoothed out considerably, much to the satisfaction of the firemen who were kept continuously busy by the former load fluctuations.

Most important, however, is the fact that during the cold winter months the boilers will be relieved of loads varying from 12,000 to 15,000 lb/hr, delaying for several years the necessity of adding another boiler.

Case 2 - Carolina Transformer Plant

Stack Corrosion Inhibited

CORROSION activity, due to ash and moisture dropping out of suspension in the combustion products stream and settling in the 42-in. diameter base of their two 50 ft high steel stub stacks, has been inhibited by the application of protective surfacing, at the General Electric Distribution Transformer Plant, located near Hickory, North Carolina.

The stacks are connected to two 30,000 lb per hr gas or oil fired packaged steam generators, operating at 265 lb pressure. Each steam generator is provided with a flue gas outlet connection and expansion joint, which are joined to the self-supporting stacks at a point 7 ft above the floor base.

The flue gas outlets provide forty-five degree upblast, thereby allowing a 42-in. by 6 ft deep drop-out chamber at the base of the stacks. This chamber is provided with a bottom access or clean-out door, located 10-in. above the floor-line of each stack.

Accumulations of the by-products of combustion, such as soot, fly-ash, slag and moisture, are removed periodically from the base of the stack through the clean-out door. Naturally, this location is an ideal spot for corrosion to start, and may result in extensive damage to the metal stack unless protection is afforded.

However, at the first approaching signs of corrosion activity, the inside of the stacks was carefully



cleaned by wire brushing, then the protective coating was applied according to the manufacturer's directions. The coating used in this instance was Apexior, supplied by Dampney Co. At the recent annual steam plant inspection, the metal inside the stacks was in excellent condition.

By SAM BOYER
Foreman, Plant Utilities

Battery Powered Trucks

**Celanese Corporation
Rome, Georgia**

PROMINENT among the chemical fiber producing facilities of Celanese Corporation of America is the huge rayon plant in the rapidly expanding Coosa Valley industrial area at Rome, Georgia. Consisting of 12 buildings covering more than 1,225,000 sq ft, this plant produces a number of related chemical fiber products including rayon filament yarn, acetate yarn rayon tow, rayon staple fiber and special extra-strong rayon yarns.

Fortisan-36 is one of the latter; it is made primarily for industrial use and is said to have the greatest tensile strength of any known natural or man-made fiber. Its qualities have made Fortisan-36 ideally suited to such heavy-duty applications as power transmission belting, high pressure hose, conveyor belting, filters, oil hose and tarpaulins.

Modern materials handling techniques play an important role in the production of these versatile

Bales of wood pulp are stacked 4-high on pallets as they are unloaded.

chemical fibers at Celanese. In 1929 when the Rome plant first began operations, hand trucks and overhead cranes were the means by which materials were moved through various production phases. The first electric industrial trucks were installed in 1946. The present fleet consists of 15 walkie trucks and three driver-ride fork lift trucks powered by Edison batteries. Maintenance reports at this plant show that of the original Edison 10-cell C8 batteries installed with the first trucks, eight are still delivering full rated capacity after more than 10 years' service.

The wood pulp which serves as the basic raw material arrives at the Celanese-Rome plant in paper-wrapped 400-lb bales which are stacked on wooden pallets as they are unloaded from carriers. Fork lift trucks move these pallet loads of four bales each to a nearby storage area from which they are pulled as needed into the production line.

Following manufacturing, the acetate yarn is wound on cones or cylinders, depending on the end-use of the product. Special yarn racks designed by Celanese are used to convey the yarn by means of walkie trucks through final production stages. The yarn cones are speared on metal prongs on the rack which can hold as many as 200 of these yarn carriers at one time. Several hundred of these yarn racks are used throughout the plant.

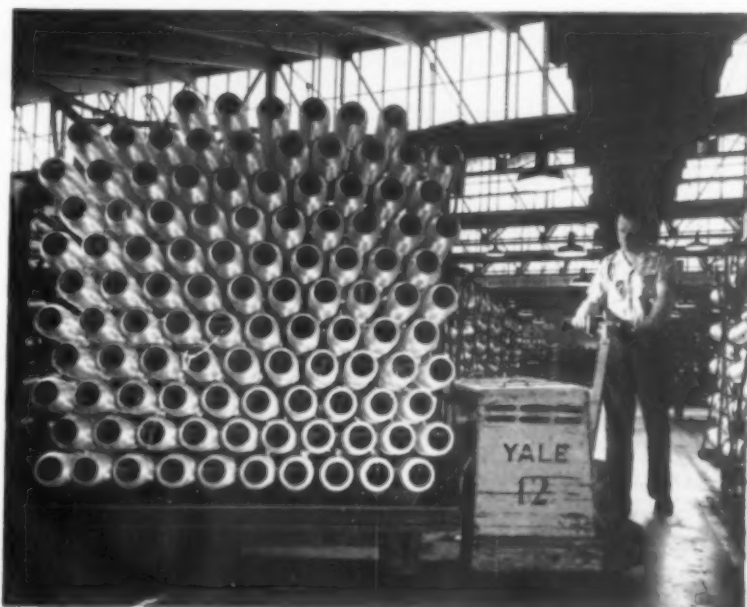
The Edison storage batteries powering the fleet of electric industrial trucks at the Celanese-Rome plant consist of 10-cell C8's for the trucks and 24-cell C8's and 24-cell C7's for the driver-ride fork lift trucks. The driver-ride trucks are operated one eight-hour shift daily and the batteries are left in the trucks during charging. Most of the walkie trucks work two shifts. The batteries are removed from these for charging and replaced with a freshly-charged one at the end of a shift with the aid of an overhead chain hoist.

Dollies placed under the batteries are used for positioning at the chargers. Each battery is protected with a wooden cover while being placed in or removed from



Battery charging stations are located in major production areas.

Special racks are used to convey yarn by means of walkie trucks.



the truck to prevent the chain or carrying hooks from touching the poles or cell connectors of the battery and causing a short circuit.

Charging stations are located in the pulp storage area, the aging room and other major production sections. The textile area has the largest charging station and is

equipped with six rectifiers and four motor-generators. A majority of the electric trucks are used in the textile area and their batteries are charged at this station. The charging station in the aging room utilizes four rectifiers while the station in the pulp storage area has three motor-generator sets.

Roving Inspector Gets Cooperation

PLANT MAINTAINS QUALITY

ENMITY between the inspection or quality control department and the production department is somewhat traditional in industry. The production department is anxious to keep all machines operating at full blast, turning out a maximum amount of product. Inspection and quality control men are determined to maintain rigid standards of product quality and want to shut a machine down should the standards not be met. It becomes a question of judgment if a shutdown is necessary or if slight change in technique will remedy the situation without the necessity for a shutdown.

It is in the area of judgment that plant management can find it difficult to maintain the proper atmosphere of cooperation between production and inspection or quality control. It is not uncommon for the friendly enmity between the two departments to become not so friendly and require the intervention of higher management.

System at Decatur

To avoid this situation, the Decatur, Alabama, plant of the Wolverine Tube Division of Calumet & Hecla, Inc., utilizes a process inspector system which has proven highly successful. Wolverine Tube is a leading producer of non-ferrous seamless tube and fabricated products that are used



in virtually every industry. The Decatur plant, which celebrated its tenth anniversary in August, is one of the advanced tube mills of its type in the country and probably the most modern in the South.

Since copper or brass tube is basically the same product regardless of where it is made, Wolverine puts a great deal of emphasis on quality, as a means of making the products of its mills distinctive. Also, to be profitable, production must be kept at the maximum possible rate. Management at the Decatur plant had to devise a means of best coordinating a rigorously applied quality control system with a strongly motivated production department. The answer has proven to be the roving inspector.

Inspection Functions

Inspection at the Decatur plant falls essentially into three areas; raw material and purchased goods inspection; in-process inspection; and finished product inspection. The area of potential conflict is obviously in-process inspection. It is here that the objectives of

1 — Process inspector measures diameter of a single-layer pancake coil.

2 — Checking I.D. of very fine tubing with a "Go" "No Go" gauge.

3 — O.D. of a bunch coil just coming off a 36-in. bull block is checked by inspector.

4 — After measuring the O.D. and wall thickness of a tube section, the inspector reports his finding to the group leader.

5 — Micrometer is used to check O.D. of tubing being drawn.

quality control and production can conflict.

In-process inspection at Wolverine's Decatur plant is handled by a team of roving process inspectors. There are two process inspectors on each of three shifts,

One on each shift is assigned to the main mill building. The second inspector covers the manufacturing building, where a variety of products, particularly integrally-finned tube, are fabricated.

The process inspectors are assigned to the inspection section, report directly to the general foreman and report functionally to the quality control department. In other words, the process inspector is in a sense on the staff of the general foreman. The quality control department trains the process inspector in the standards, inspection techniques and method of functioning on the job. But the process inspector can effect changes in production only through the production department line organization.

After performing a specific inspection on the stock coming from a particular machine, the process inspector records his observation of quality on a quality control

chart located at the machine. This chart is a tool for the group leader and operator so that they have a running evaluation of their operations and a guide as to when changes may be needed in a setup.

In addition, the inspector is there, not as a policeman, but as a staff man ready to advise and assist the group leader and operator on the new setup which may be required. The process inspector is sometimes asked to help the assistant foreman in setting up properly for critical items.

Choosing Inspectors

It can be seen that the job of process inspector occupies an important position in the plant. The job is much sought after as a stepping stone for further promotion. Three basic requirements for the job are: a good grasp of all of the plant's operations; ability to use the tools of inspection as well as a meticulous approach to doing

a job; and equally important an ability to get along with people so as to get them to accept criticism and advice.

The industrial relations department at the Decatur plant has developed certain tests and interview forms that have facilitated the selection of likely candidates for the position. And, working with the quality control department, training techniques have been developed to give the selected men the additional skills they require for the job.

Inspection Methods

Inspection techniques can be appreciated by outlining a typical day's activities.

In the main mill building, the process inspector is responsible for inspecting all material processed on the drawbenches, bull blocks and coiling machines. By using a micrometer he checks the O.D. and wall thickness; I.D. is



checked with "Go" and "No Go" gauges. Coil diameters are measured with a metal tape. Visual inspection of the product is quite important in maintaining quality. Quality standards for tubing are established by the Copper & Brass Research Association (CABRA) and customer specifications as well as by the company. The process inspector is, therefore, trained in visual inspection techniques.

In the manufacturing building, the process inspector is responsible for checking the quality of production from the finning machines as well as stock which has been annealed before finning. He is responsible for checking tube length,

fins per inch, and the O.D., I.D., and the root diameter of the finned tubing. If the order calls for lands between the finned sections, the inspector checks the length of, and the distance between, lands.

Management of the Decatur plant feels that its process inspector system is a highly successful means of handling in-process quality control. The men doing the work find it challenging rather than a boring routine inspection job. And production is willing to work with the inspectors because the inspectors understand production problems and are ready to help out with quality control problems.

Case 5 - Texas Woodworking

HOT SPRAY — less time . . . less material . . . better finish

AIMING at product diversification,

The Globe Box Company of Houston, Texas, began to manufacture furniture legs. Turning the legs was no problem, but they did run into trouble in finishing them. The finishing department could handle only a fraction of the work done by the automatic turning lathes.

In an effort to do the finishing operation in one application, conventional spray deposited too much material on the legs, resulting in runs and sags. And in the humid Houston climate they had trouble with blushing. It was not possible to get sufficient build or gloss.

Then they heard of hot spray and decided to try it.

After successful tests were run, a Spee-Flo Rotoflo unit (The Spee-Flo Company of Houston), operating from the original container, was installed. They found that one coat of hot spray gave sufficient build and gloss on even porous ash wood. Problems with runs, sags or blushing were eliminated. The use of hot sprayed lacquer enabled them to install an automatic feeder, raising their production from a maximum load of 3,000 units a day to 36,000 units a day.

According to John Kirkpatrick, plant superintendent, "We couldn't have had automation without the hot spray unit."

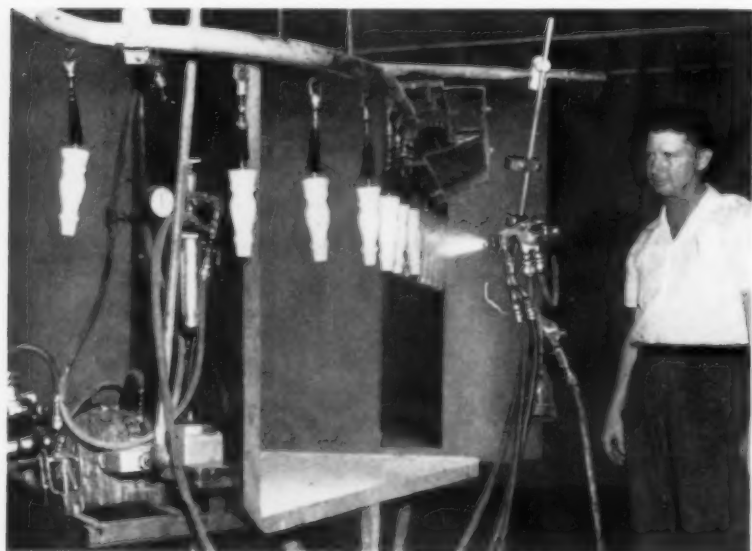
Hot spray resulted in a 30% saving in material and an even greater saving in time. Since the unit was installed, the finishing department is no longer a bottleneck, but handles all the work done by four automatic turning lathes.

Hot Spray Benefits

These savings were possible because of the unique characteristics of hot spray. In the hot spray method, the viscosity of the material is lowered by heat instead of thinner. Much of the solvent present in the material is evaporated between gun and surface, leaving a high solids film deposit. Thus more material can be deposited without sags, allowing one coat to do the work of two.

A high solids film dries faster. Globe found that the legs dried in the few minutes it took to travel the 150 ft conveyor to the packing station.

Blushing was a headache for Globe Box. Blushing is caused by moisture condensing on newly applied lacquer when the humidity is high. This condensation occurs because evaporation of fast solvents lowers the temperature of the finish below that of the room. Hot sprayed lacquer is deposited at or slightly above room temperature, eliminating the condensation and blushing. Because heat-reduced paint atomizes easier, less air pressure is required, resulting in less overspray, a saving in both material and booth cleanout time. Globe proved a 30% material saving.

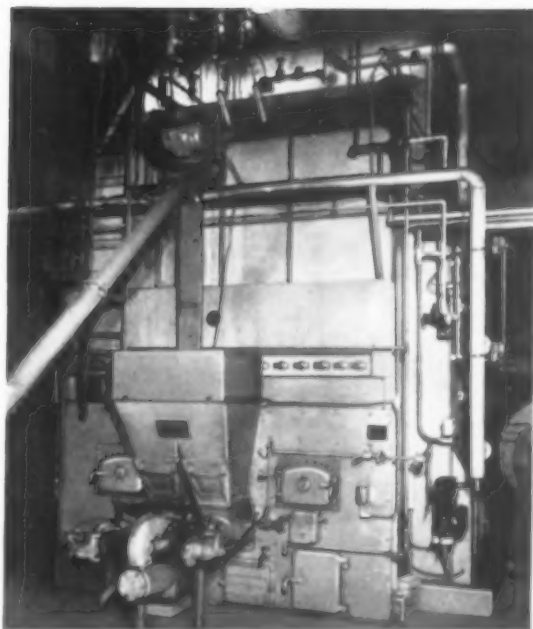


DUAL FIRING in Boiler Expansion

EXPANSION of dyeing facilities at Virginia Mills in Swepsonville, N. C., required more steam. To handle this and future demands, the plant purchased a Babcock & Wilcox FF-15-28 unit operating at 150 psig and developing 28,000 lb/hr — 30,000 lb/hr for peaks.

Recognizing coal's economy and stability of supply a Detroit Retort Stoker was purchased to fire the new boiler. Designed to burn Eastern Bituminous with 14,500 Btu, 6% ash, 2600 F fusion temperature, the underfeed ram type stoker also offered economies in construction as ashes are dumped into shallow pits at the sides of the stoker and are removed at the operating floor level. The stoker hopper is filled by a motor operated stoker feeder from coal storage adjacent to the firing aisle.

However, gas had become available in the area and under certain conditions was attractively priced. To take advantage of this Virginia Mills installed auxiliary burner equipment in the boiler furnace wall.



This dual firing arrangement permits taking advantage of any special price situation and assures continued operation during shortages of either gas or coal due to severe weather conditions, strikes, etc.

Operating records at this plant show excellent results with no ill effects to the stoker from the use of the auxiliary burner equipment.

Case 7 — Georgia

Clean Conveyor

BRUNSWICK Pulp and Paper Company recently completed a three million dollar chlorine dioxide plant at Brunswick, Georgia. The new plant extends facilities for manufacturing high quality paper pulp for the Scott Paper Company and Mead Paper Corporation, joint owners of the Brunswick Company.

A modern conveying system, including a Thermoid No. 400 WC White Belt, has been installed with the aid of Thermoid Company field men. The special white rubber belt operates 24 hours a day, seven days a week, and conveys approximately 750 tons of bleached finished pulp per day. It is construct-



ed with $\frac{1}{8}$ " x $\frac{1}{8}$ " covers and is 48" wide with four plies.

The white color of the belt serves to maintain cleanliness and purity of the product. Finished bleached pulp, dumped on the receiving end of the belt, is carried up a 184 foot 45 degree incline and is dumped into a central location in the high density storage chests.

Pulp is then distributed into either of two chests by screw conveyors.

Brunswick Pulp and Paper has installed a television camera at the dump-off end of the conveyor, enabling employees in a central control room to maintain constant vigil on the operation of the belt. There are six such cameras located throughout the plant.



Case 8 — Texas Metalworking

SHOP LIGHTING installation and operating savings with **TRANSLUCENT PANELS**

IN HOUSTON. The Jamar-Olmen metalworking plant is a pre-fabricated type building using a considerable number of translucent skylight and sidelight panels to secure the required working light.

By using the translucent panels, Jamar-Olmen saved around \$11,000 initial construction costs and nearly \$4,700 per year in lighting costs.

Plant consists of two 59' x 291' pre-fabricated units (Metallic Building Co.) joined with a 21' covered section running the entire length of the buildings. Floor space is approximately 58,200 sq ft.

In the roof there are 9,068 sq ft of Corrulux corrugated translucent panels and on the sides there are 2,132 sq ft of panels. No night work is performed in the sheet metal fabricating shop and lighting system design basis was 5 foot-candles at night for safety and general illumination purposes. Installation consists of 23 Wide-Lite luminaires lamped with 400 watt, color-corrected, mercury vapor lamps. Provision is made to add 18 additional Wide-Lite mercury vapor luminaires.

Lighting Survey — A detailed analysis was made by Gates McHenry & Company of Houston comparing the cost of the lighting installation in the existing building, with the cost of providing the same building with 40-50 foot-candles of illumination without the use of Corrulux panels.

Estimated first cost savings by the use of Corrulux skylighting panels were around \$11,000 in initial construction costs; operating savings nearly \$4,700 per year.

The survey features tables on luminaires, initial installation costs, annual operating costs; a layout of the lighting system; and supplemental analysis data on a possible two-shift and three-shift operation; and includes a nomograph chart which indicates the approximate square footage of Corrulux required to produce minimum foot-candles required.

Copies of the mentioned detailed lighting survey and cost analysis on the Jamar-Olmen Plant are available to SPI readers — Write: Corrulux Div., Box 20026, Houston, Texas.

SPLIT ROLLER BEARINGS

on Air Control System

Reported by J. W. O'CONNELL

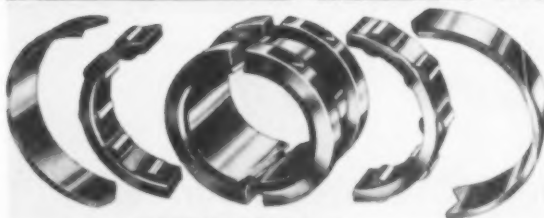
Manager — Atlanta, Georgia Office
Dixie Bearings, Inc.

AT CHALMETTE, Louisiana, Dixie Bearings, Inc., recently assisted Kaiser Aluminum & Chemical Corporation in the selection of Cooper split roller bearings to be used on their centralized air control system. The latter collects smoke from the pot rooms and pipes it through overhead steel ducts to concrete scrubbing chambers for cleaning. The clean air is then released through a 500 ft concrete chimney.

The Cooper split roller bearings are regular anti-friction roller bearings with the additional feature of being split right down to the shaft. The split feature permits the user to apply an anti-friction bearing where it would be impractical or impossible to mount solid ball or roller bearings.

The two halves of the inner race are clamped on the shaft by means of split locking collars. Bearing assembly is completed by placing the halves of the cage with rollers and the outer race into position. These in turn are simply housed in the split cartridge, the halves of which are properly located by bosses or dowels and fastened together by high-tensile bolts. The cartridge is spherically machined and can swivel inside the spherical seating of the pillow block housing, adjusting itself to possible shaft misalignment.

Smoke, collected from the pot rooms, is drawn through the system by sixteen 800 hp Westinghouse-Sturtevant fans. Each fan has a capacity of 348,000 cfm at 700 rpm and runs on two 7-in. heavy series Cooper split roller bearing pillow blocks (one expan-



sion and one fixed type). The bearings are oil lubricated and the housings are fitted with sight level gauges.

Dixie Bearings offers complete bearing service throughout the South with stock carrying branches in Jacksonville, Atlanta, Louisville, Baton Rouge, Charlotte, Greensboro, Greenville, Chattanooga, Kingsport, Knoxville and Nashville.



A fork truck loads concrete blocks into one of the 128-foot production autoclaves for curing. Recorders are mounted near each other so that temperature and pressure in the production autoclave can be coordinated exactly with temperature and pressure in the pilot autoclave.

Case 10 — Kansas Block Plant

Instruments Correlate Pilot and Production Procedures

DENSER, higher strength, and more stable concrete block is now being produced by a high pressure steam curing installation at Capitol Concrete Products Co., Inc., Topeka, Kans.

The installation, part of a \$150,-000 plant expansion program, consists of one 6 ft pilot autoclave and two 128 ft production autoclaves which cure the blocks at 140 to 150 psi and 360 to 366 F.

According to Ray A. Browning, president of the firm, precise control of the curing process is obtained by correlating pilot and production data provided by temperature-pressure recorders.

Time, pressure, and temperature must be carefully controlled to maintain consistent concrete quality from day to day.

Correct combinations of these three factors for the various shapes and sizes of concrete blocks made by Capitol are first worked out in the pilot autoclave. To maintain

an accurate record of curing, the company uses Series 100 recorders made by the Powers Regulator Company.

The instrument provides a graphic record of temperature and pressure on a clock-driven chart, which is then used to determine production standards.

"Since the steam for the curing process is regulated manually, we must rely on precise performance guides to maintain quality," Browning said.

Control is especially important during the 3-hour pressure build-up period on the production autoclaves. If the build-up is too fast, the steam will damage the blocks inside.

At the end of the build-up, the blocks are being cured by steam at 143 psi (150 psi when it leaves the boiler). This steam pressure is maintained for the next five hours. A 15-minute blowdown completes the process.

During the 8-hour curing process, time, temperature, and pressure are coordinated by checking the Powers recorder linked to the production autoclave and mounted alongside the pilot autoclave recorder.

"Should any question arise concerning the curing, we have a complete record of the process, which tells us what happened and when," Browning said.

Case 11 — Georgia

Center Winding Problem Solved for Bag Plant

A GEORGIA plant manufactures fruit and vegetable bags, and has a department which makes labels for these bags.

The paper for making these labels comes to the plant in a roll 16" wide and 24" in diameter. The web from this roll is passed through a printing press which prints four designs on the paper.

Rotary knives then slit the paper into four 4 strips, and it is rewound on individual cores.

Center winding was desirable, but difficulty was encountered in

locating a device which would provide the light tension required, as well as maintain this tension at a constant value automatically.

The problem was further complicated by the fact that two of the four designs acquired a slightly greater thickness than the other two, by reason of heavier inking. This resulted in two, 4" wide, rolls being about 24¼" in diameter, while the other two were, perhaps, 24½" in diameter, after printing and rewinding.

Fulghumatic, Inc., of Atlanta builds a device for center winding, combining the operating principles of the fluid coupling with those of the differential, and Fulghumatic was called in on the job.

On another installation a Fulghumatic is holding a tension of 300 lb within about 4 ounces, plus or minus. Naturally, this inherent sensitiveness appealed to the bag manufacturer, whose tension requirement was only about 30 lb.

Center winding, at an exact constant tension, over the required 8/1 range of 3"/24", presented no problem to a standard Fulghumatic. The introduction of another simple differential solved the problem of winding the two sets of different final roll diameters, with equal tension on both sets. The same principles can be used to apply equal, constant and exact tension on as many ends as required.

The older of these two devices now has been in service over a year and is operating perfectly. The second one has seen ten months of satisfactory service, without maintenance.

Normally, the Fulghumatic is furnished with a standard alternating current Reliance constant speed motor, a Twin Disc fluid coupling, a Reeves differential, a Reeves transmission, Dodge V-drives, Chain Belt Company's chain drives, Clark Controller Company's electrical controls and, if brakes or clutches are required, Dyna-TorQ electrical units are used. However, since all items used in the machine are standard items, motors, controls, variable speed units, etc., which the customer may already have on hand, may be used, thereby effecting a saving.



Sealing a joint in outside ductwork with an epoxy resin cement that provides a permanent repair. Because the cement comes in self-metering tubes, the exact amount of compound needed for this job was obtained by mixing equal lengths squeezed from each tube.

Case 12 - Maryland

Epoxy Repairs

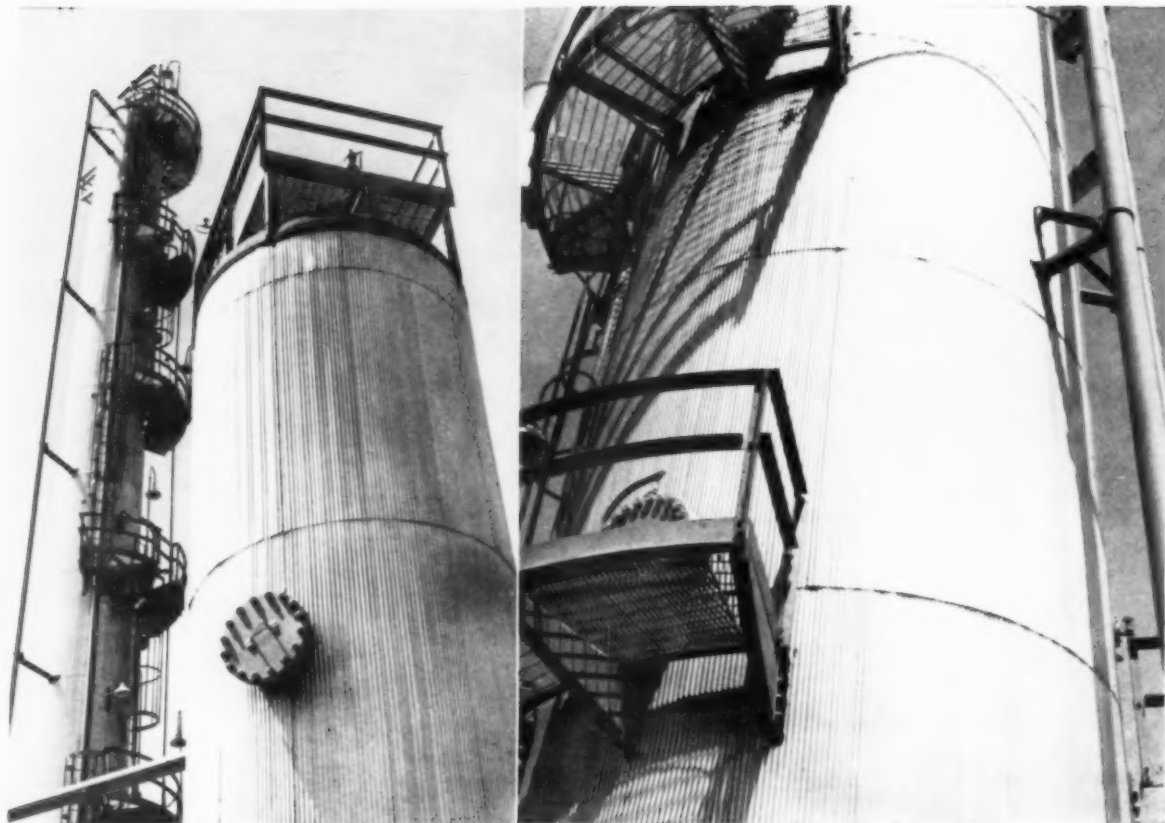
REPLACEMENT of more conventional and costlier repair and maintenance processes by the epoxy resins is due to their ease of usage, resistance to most chemicals, oil, and water, chemical curing with minimum shrinkage, and strong adhesion to many surfaces. They can be used either for relatively small repairs, such as those involving cracks and seams, or for patching larger areas with glass cloth or tape laminations. Smooth-On Manufacturing Company, has put out a repair kit that contains materials necessary for both types of repair.

An example of the kit's use that comes from Procter & Gamble's Baltimore plant is interesting because in this case the repair involved copper, a material with which epoxies usually have a poor bond. Despite the doubts of the manufacturer as to its effectiveness with copper, the kit was used successfully to repair a ¾-in. thick copper acid wash tank with epoxy resin and glass cloth patches. This repair has held up and no new leaks have appeared.

Diverse use of the aluminum cement (Metalset A-4) included in the kit is also reported. Because the cement is packed in self-metering tubes, the proper proportions of epoxy resin and hardener for mixing can readily be obtained.

One example of use of this material comes from a paper mill where discard of deeply-pitted steel rectifier rolls has been found to be unnecessary when epoxy resin compounds are used as a substitute for welding. This paper company puts severely pitted rectifier rolls back into service quickly with epoxy resin repairs. The company had previously abandoned efforts to repair by welding because the welding often warped the rolls.

As the result of a search for a chemical setting compound that forms a tough, metal-like vibration proof joint, a Southern utility company now uses Metalset for leaks on turbine oil piping and on turbine flanged joints. It was found that Metalset hardens into a tight joint that is more reliable than a brazed joint and absolute tightness can be obtained even with a fitting that has to be backed off a half turn during assembly. A permanent joint is desirable in this usage because turbine oil piping is well provided with unions or flanges.



Case 13 - Texas Refinery

Deep Corrugated ALUMINUM JACKETING Weatherproofs & Protects

THE ABOVE photos show a very extensive application of protective, corrugated aluminum jacketing over insulation on large towers and vessels at the Phillips Petroleum Company refinery at Sweeny, Texas. Result of the recently completed installation is a series of gleaming, silver-colored towers in a modern, efficiently maintained refinery.

Childers Manufacturing Co. of Houston, Texas furnished 97,953 sq ft of "deep-corrugated aluminum jacketing for this outstanding installation. All of this jacketing material was formed with 1¼" corrugations from .019" thick aluminum. All was supplied with factory-attached moisture barrier to guard against harm to the aluminum from the underneath side.

Three Houston insulation companies installed the Childers jacketing on various units at the Phillips refinery. These were: B. & B. Engineering & Supply Co., Inc., Thorpe Insulation Co., and Industrial Insulators, Inc.

Calcium silicate and cellular glass type insulation was applied to the fractionator towers and caustic washer vessels. The aluminum jacketing was secured over this insulation with stainless steel sheet metal screws. Where necessary, the screws were supplemented with circumferential bands of ¾" aluminum strapping.

Phillips Petroleum Company engineers specified aluminum jacketing because of its long life and superior protection as well as its pleasure appearance. Among the desirable features of the Childers product are the factory-attached moisture barrier, which saves labor at the time of installation, and the Cross-Crimp feature. The latter consists of rolled-in 3/16" cross-corrugations going across the 1¼" or 2½" corrugations.

"Cross-Crimp increases the strength of a deep corrugated jacketing sheet approximately 28%," reports Jack LaFave, manager of Childers' Jacketing Division. "This extra strength resulting from Cross-Crimp can mean as much as 1/3 savings in the cost of aluminum jacketing."

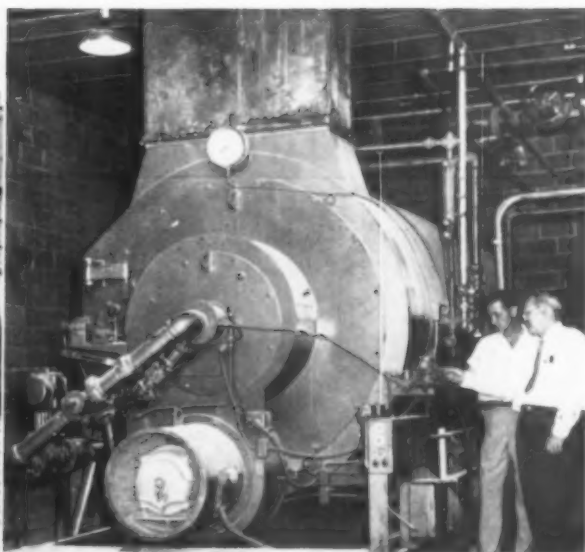


Case 14 — Georgia Block Plant

Heat for Block Curing

THE FOURTH largest autoclave block plant in the country is the Concrete Manufacturing Company of Atlanta, Georgia. To improve concrete block quality and increase production, the company recently completed a \$250,000 expansion which included autoclaves and a new boiler.

A combination gas and oil fired Cyclotherm 500 hp



packaged fire tube boiler, installed by Atlanta's Rumbold & Company, generates 17,500 lb/hr at 200 lb. The boiler furnishes steam to three autoclaves — large 165,000 lb steel cylinders 10 ft in diameters and 120 ft long. Electronically controlled units, fabricated by Chicago Bridge and Iron, operate on 150 lb pressure.

Photos show the new autoclave installation and the Cyclotherm 500 hp boiler. At the right are C. E. Waller, Plant Superintendent of Concrete Manufacturing Company and B. J. Armistead, Sales Engineer of Rumbold & Company.

Case 15 — Louisiana

Doors Stay Open With Radiant Heaters

HEATING a 180,000 sq ft warehouse economically and without loss of floor space was the aim of Interstate Electric Company and Auto Lec Stores, New Orleans, Louisiana.

As is usually the case in buildings used for this purpose, the outside doors are frequently open and the operating personnel are required to work in this drafty area.

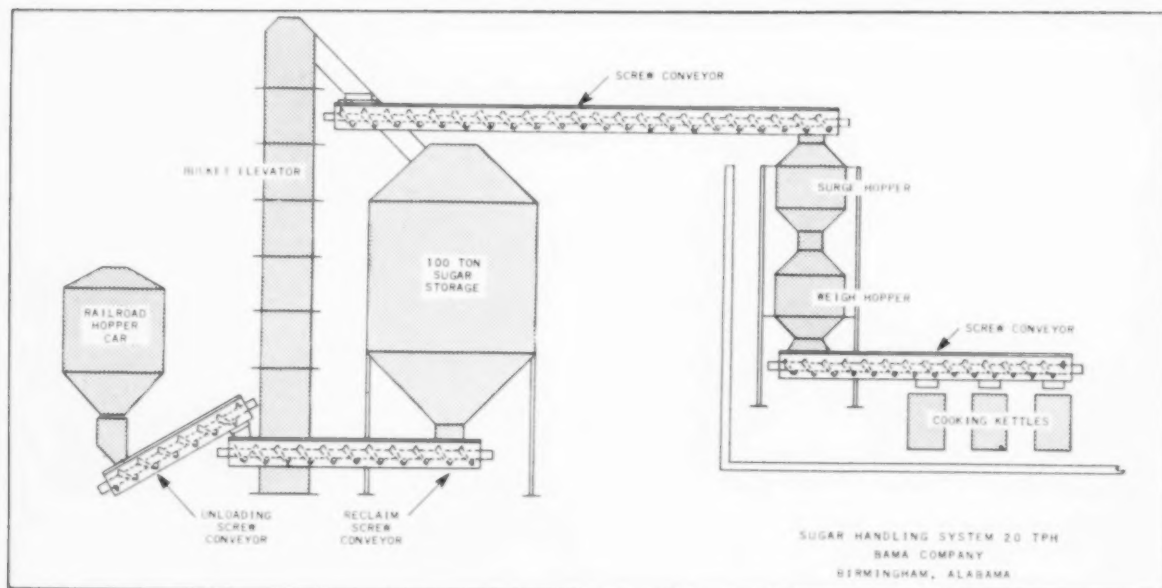
Infra-red overhead Panelblocs, manufactured by Prat-Daniel Corporation, were installed — one over each door. These gas-fired radiant heaters directed the heat



where needed, regardless of air movement. Therefore, the drafty condition at the doors had little effect on the comfort heating sup-

plied by Panelbloc.

Even on the coldest winter days, personnel may work comfortably adjacent to the doors.



Case 16 — Alabama Food Processing

Better Sugar Handling

THE BAMA COMPANY, located in Birmingham, Alabama, processes jellies, jams, mayonnaise, and peanut butter for consumer use.

In processing they use a quantity of granulated sugar and prior to the installation of a complete sugar handling system by the Industrial Division of Continental Gin Company, they were handling sugar in 100 lb bags by manual labor.

The Bama Company, American Sugar Company, and Continental Gin Company cooperatively designed an automatic sugar handling system to handle 20 tph granulated sugar from railroad hopper car through storage tanks

directly to the cooking kettles.

This system consists of a railroad track unloading hopper with screw feeder at 90 degrees to the railroad track feeding a vertical bucket elevator which lifts the sugar to the top of a 100 ton storage tank.

The discharge from the elevator can feed to the storage tank, or by means of a gate, directly to a screw conveyor which feeds a surge hopper that is located above an automatic weigh hopper. The sugar in storage can be reclaimed from the storage tank by means of a screw conveyor to the above mentioned bucket elevator and then into the screw conveyor to the surge hopper.

The automatic weigh hopper is controlled by a scale located near the cooking kettles. The chief cook can set the scales for the amount of sugar required and by remote control energize the system which will feed the exact quantity of sugar to any one of the three cooking kettles.

This system in addition to providing 100 tons storage for sugar gives the Bama Company automatic handling of their sugar plus control of the amount of sugar and a considerable amount of labor saving against handling the 100 lb bags.

The equipment outlined above was completely designed, manufactured and erected by the Industrial Division of Continental Gin Company, Birmingham, Alabama.

A similar system to the above has been installed by the Bama Company in their Houston, Texas, plant.

Case 17 — Virginia

Longer Packing Life

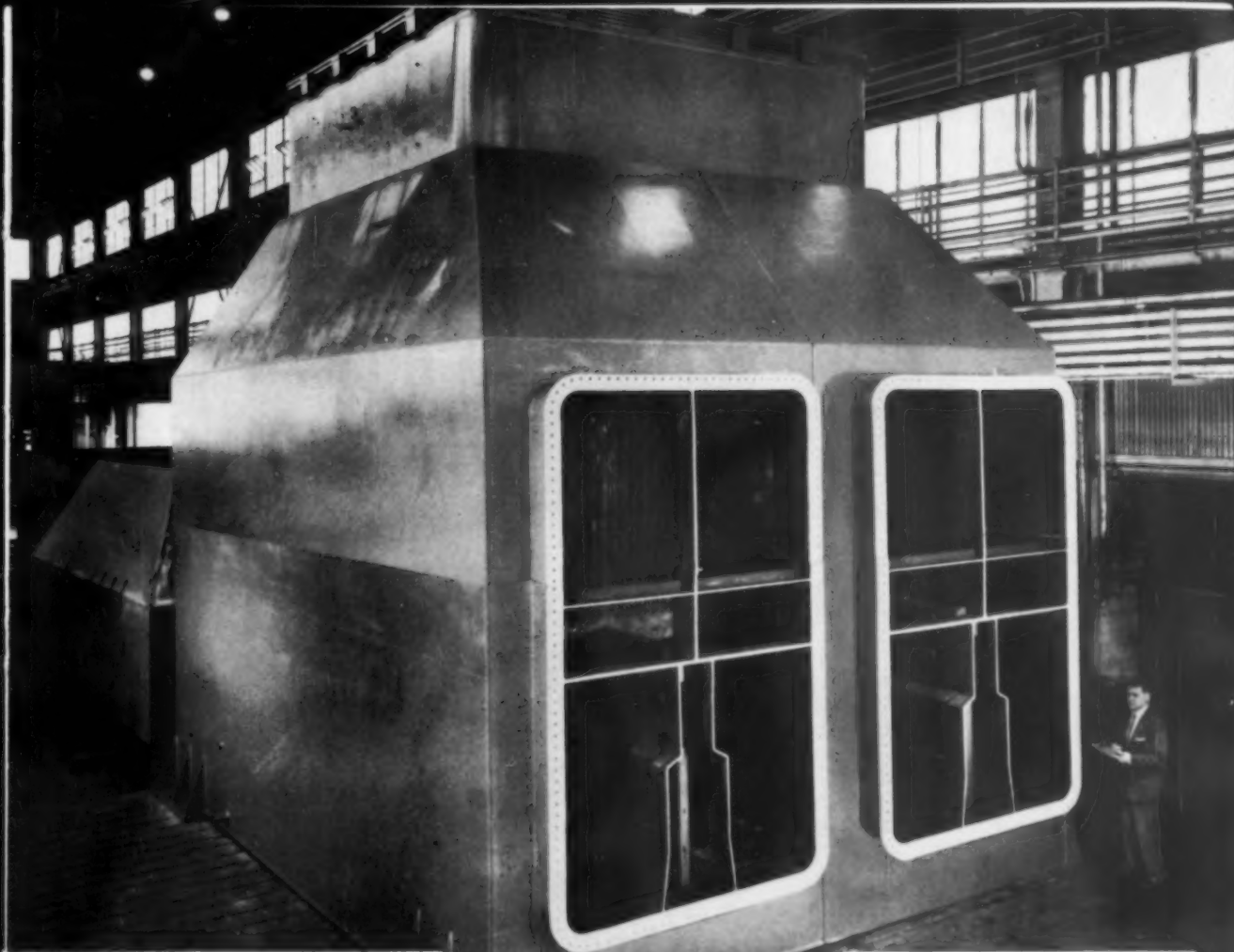
OUR BUILDING is now eleven years old. We have a 350 hp air conditioning unit and two 150 hp boilers accompanied by a wide variety, sizes and makes, of valves

and pumps. All of the valves and pumps have some type of packing which in a normal course of time will dry out and become hard — then leakage occurs.

I have cut my valve and pump packing expense in half by the use of a product of Acheson Colloids Co., called "Oildag." You simply loosen the packing nut or gland, use a small paint brush to

apply Oildag around the stem or shaft, then put the nut or gland back in place. Oildag renews the life of the packing stopping the leakage. It also does an excellent job on boiler drum head gaskets to keep them from sticking, and has many other uses in the plant.

By **JOHN CLAPP**, Maintenance Engineer, Sears, Roebuck & Co., Richmond, Virginia.



This 75,000 square foot condenser pre-assembled and pre-fitted at Maryland was shipped in 5 compact maximum rail clearance sections.



5-piece Maryland condenser design

Horizontal division separates the neck section (1). The main body of the condenser is divided both vertically and horizontally, as shown by sections numbered (2), (3), (4) and (5).

Maryland's 5-Piece Condenser

Designed for Low Cost Field Erection

Maryland designed, built, pre-fit and pre-assembled this 75,000 square foot condenser in five compact sections for accurate and low cost field erection.

Now being installed at Reesedale, Pennsylvania in West Penn Power's Armstrong Station, this unit indicates Maryland's ability to engineer and build large surface condensers for electric utilities. It will condense 812,819 pounds of steam per hour exhausted

from a 156,250 KW Westinghouse turbo-generator, and its full deaerating hotwell will produce condensate with no more than .01 cc of oxygen per liter.

When *your* plans call for steam surface condensers, consider the advantages offered by Maryland's years of engineering experience and facilities for designing and manufacturing condensers, of any size.



Industrial Products Division

MARYLAND SHIPBUILDING & DRYDOCK COMPANY

BALTIMORE 3, MARYLAND • Representatives in Principal Cities

Stainless Steel Condenser Tubes

MONONGAHELA Power Company's Rivesville Station in West Virginia has just installed, in their Unit 6 condenser, 9,234 stainless steel tubes supplied by Allegheny Ludlum Steel Corporation. These tubes are 26 ft long and $\frac{3}{4}$ -in. outside diameter, giving a condensing surface area of 55,000 sq ft.

The condenser reduces the exhaust steam from the low-pressure turbine to water, which is returned to the boiler where it is again reheated to high-pressure steam to run the turbine that drives an 85,000 kva generator. About 45,000 gallons of Monongahela River water is pumped through the condenser per minute to absorb heat from the steam at 80 to 115 F and condense it to water. The pH value of Monongahela River water at Rivesville has been known to be as low as 2.8.

Many problems arise when cooling water is corrosive to condenser tubes. Among them is the film of corrosion products which adheres tenaciously to their surfaces and tends to retard heat transfer from the steam to the cooling water. If this corrosion film is not removed when the tubes are cleaned, their cleanliness condition will not be restored to much better than 60 per cent cleanliness factor. However, if the corrosion film is removed at each cleaning, the bare tube metal is exposed to more rapid attack from the acid river water.

Some stainless steel tubes (Type 304) installed only under the air baffle of another condenser were found to be free of any corrosion film and apparently are not subject to corrosion attack from Monongahela River water. Thin wall stainless steel tubes that are 85% clean have about the same heat transfer ability as the thick-wall non-ferrous tubes previously used.



THE FIRST undertaking of its kind, a complete main steam condenser was retubed with all stainless steel tubes. These stainless steel tubes have a life expectancy of 30 years compared to up to 10 years for the tubes previously used. In addition, the new stainless steel tubes are expected to give better performance than the tubes formerly used.

The possibilities for better average condenser performance with less cleaning maintenance together with greater life expectancy prompted Monongahela Power Company engineers to try a complete installation of stainless steel condenser tubes. It is believed that the average performance level of

the unit will be improved and on cleaning, when it is required, sufficient recovery will be obtained to pay for the cost of cleaning.

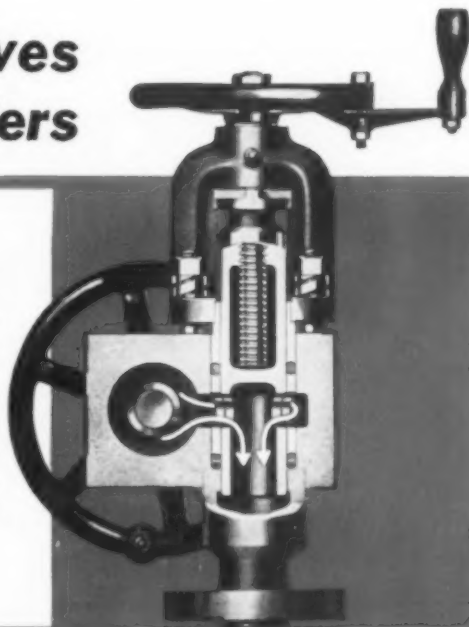
The Monongahela Power Company serves over 200,000 customers in northern and central West Virginia and adjacent counties in Ohio, Maryland and Virginia.

UNIT TANDEM

**rugged blow-off valves
for high pressure boilers**

HARD-SEAT—SEATLESS COMBINATION

■ For boilers up to 1500 psi, this Yarway Unit Tandem Blow-Off Valve offers the maximum in dependable service. A one-piece forged steel block serves as the common body for the Yarway Stellite Hard-seat blowing valve and the Yarway Seatless sealing valve. All interconnecting flanges, bolts and gaskets are eliminated. The Unit Tandem at right is sectioned through Seatless Valve to show balanced sliding plunger in open position and free flow.

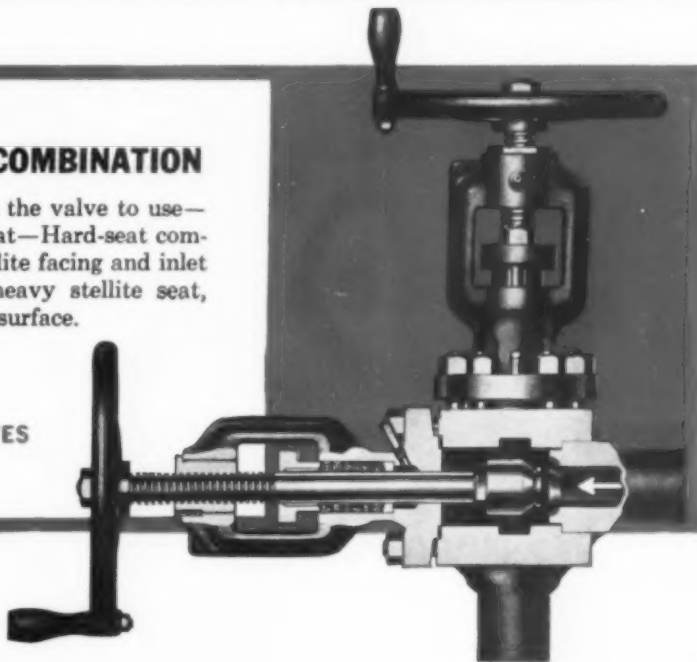


HARD-SEAT—HARD-SEAT COMBINATION

■ For boilers to 2500 psi, this is the valve to use—Yarway's Unit Tandem Hard-seat—Hard-seat combination. Disc has welded-in stellite facing and inlet nozzle has integral welded-in heavy stellite seat, providing smooth, hard-wearing surface.

**OVER 4 OUT OF 5
HIGH PRESSURE PLANTS
USE YARWAY BLOW-OFF VALVES**

Write for Yarway Catalog B-434



YARMALL-WARING COMPANY

Home Office:

116 Mermaid Avenue, Philadelphia 18, Pa.

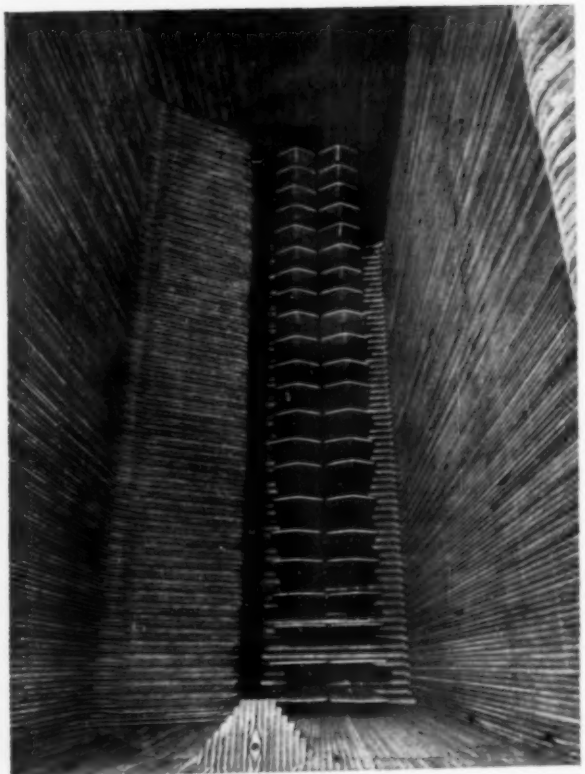
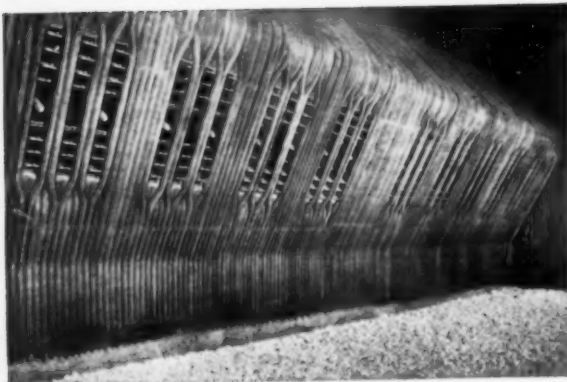
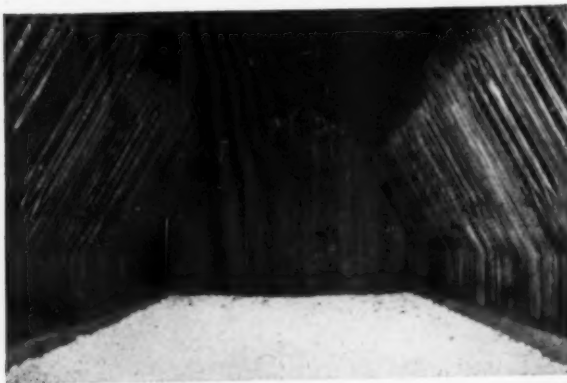
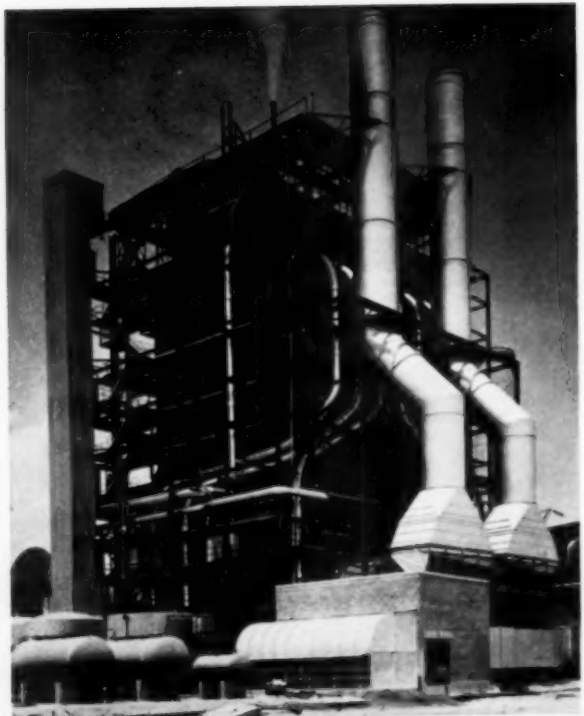
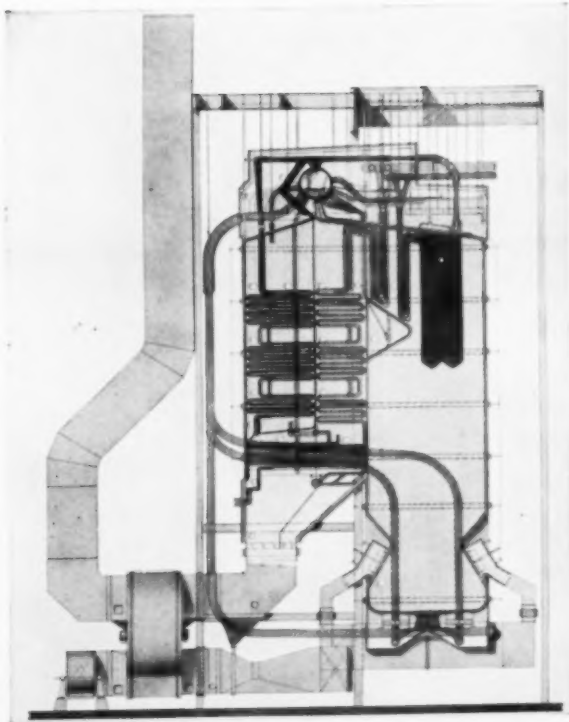
Southern Representative:

Bona Allen Building, Atlanta 3, Ga.

YARWAY

BLOW-OFF VALVES

Performance



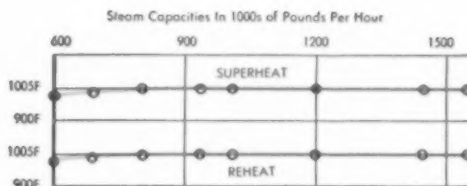
of RILEY TURBO FURNACE Reheat Unit At Sterlington Steam Electric Station *Exceptional* From Start-Up!

Unit Capacity — 1,550,000 lbs/hr

Pressure — 2175 Psig

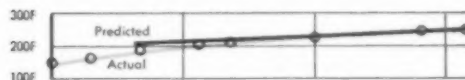
Superheat and Reheat — 1005F

Wide Range of Steam Temperature Control



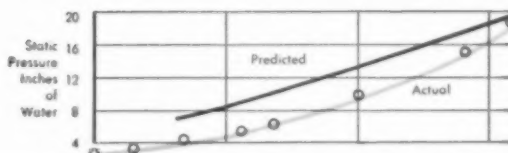
Low Air Heater Exit Gas Temperature

High Unit Efficiency



Low Forced Draft Fan Pressures

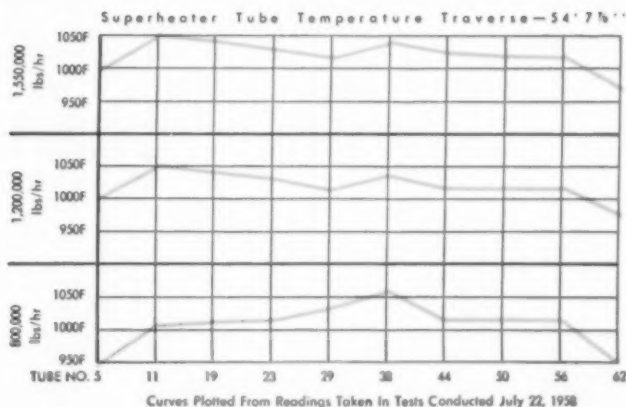
Low Auxiliary Power



Minimum Superheater Metal Temperature Variations Across 54 Ft. Wide Furnace

This results from the fact that the Riley Directional Flame Burners, arranged for opposed firing, produce uniform combustion across the entire 54' 7 $\frac{7}{8}$ " width of this Turbo Furnace which has no water cooled platens or divided walls. Gases rise evenly and vertically within the furnace envelope.

Views of Louisiana Power & Light Company's Riley Unit at Sterlington illustrate the characteristic TURBO FURNACE bottom and some of the 20 Directional Flame Burners.



FOR TURBO FURNACE DETAILS — WRITE RILEY STOKER CORPORATION, WORCESTER, MASSACHUSETTS

A survey of your plant by a qualified consulting engineer could show ways of making surprising savings in your power costs.



RILEY

STEAM GENERATING & FUEL BURNING EQUIPMENT

Maintenance and Steam Traps

... there's a relationship that goes far beyond trap maintenance alone

Good traps and good trapping have a greater effect on your maintenance costs than does trap maintenance itself. By that we mean that the right traps, properly selected and installed, and with the benefits of a preventive maintenance program, will save far more maintenance dollars than they will cost.

Under the pressure of spiralling maintenance costs, this thought becomes mighty important. Let's take a look at what it involves:

Proper Selection of Steam Traps

1. Be sure it's the right type of trap.
2. Be sure it's sized right and is for the correct operating pressure.
3. Be sure it's first rate in design and construction.

Proper Installation of Steam Traps

1. Install them so they are accessible for inspection and maintenance.
2. Install a test valve.
3. Use a union or unions.
4. Use a shutoff valve or valves.
5. Use a strainer ahead of the trap if dirt conditions are bad.
6. Use a by-pass only where continuity of service is imperative.
7. Standardize inlet and outlet connections.

Preventive Maintenance Program

1. Test trap regularly for proper operation. (Trap size, operating pressure and importance determine frequency.)
2. Inspect internal mechanism at least once a year.

You Get Indirect Benefits As Well

The direct benefits of the plan outlined are pretty obvious — good traps, properly selected, require less maintenance... testing and inspection prevents troubles that lead to maintenance.

However, this plan provides indirect benefits which reduce maintenance in other parts of the plant as well:

Good traps save steam and reduce the load (and consequently maintenance) on fuel handling and

burning equipment and on ash handling equipment.

Good traps protect the system by eliminating water hammer and preventing the damage it can do.

Good traps discharge carbon dioxide before it can go into solution to form corrosive carbonic acid — less corrosion, less maintenance.

Good traps increase production to reduce the length of time equipment must operate or reduce the amount of equipment needed... either way maintenance is reduced.

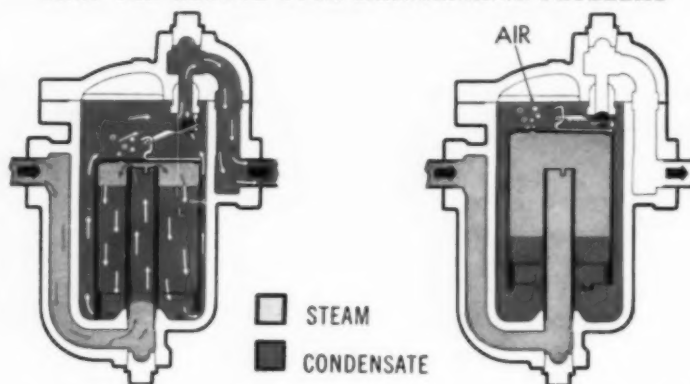
How to Go About It (The Sales Pitch)

We admit we're prejudiced, but we don't think there is any better way to select steam traps than with the help of the 44 page Armstrong Steam Trap Book. Here in a single source is specific data on the selection and sizing of traps, how to install them for best results, and how to maintain them most economically.

The Steam Trap Book will also give you full information on the design and construction of Armstrong Inverted Bucket Steam Traps that offer these important maintenance-reducing advantages:

1. Armstrong Traps are dependable.

HERE'S THE STEAM TRAP DESIGN THAT CAN REDUCE YOUR MAINTENANCE PROBLEMS



Trap open. Condensate entering trap has caused bucket to lose buoyancy. Weight of bucket times leverage pulls valve open. Air is discharged along with condensate.

Trap closed. Steam has floated inverted bucket; valve is held tightly closed by system pressure. Air entering trap passes through bucket vent and accumulates at top of trap.

2. Armstrong Traps require no adjustments — go from full load to zero load automatically.

3. Armstrong Traps are self-scrubbing — ordinary dirt conditions can't hurt them.

4. Armstrong Traps have long-life parts — valve and seat are heat treated chrome steel — lever assembly and bucket are stainless steel.

5. Armstrong Traps have water sealed valves to minimize wire drawing and erosion.

Ask for your copy of the Steam Trap Book—there is no obligation. Then test Armstrong Trapping. If you are not completely satisfied with the results, you can return the traps for a full refund of the purchase price. You can't lose much that way. Call your local Armstrong Representative or Distributor, or write

Armstrong Machine Works
8065 Maple Street
Three Rivers, Michigan



**ARMSTRONG
STEAM TRAPS**

Fuse Change Cuts Plant Downtime

WE HAD a heating problem in our main panels that was causing ordinary renewable fuses to blow. These outages occurred several times weekly in each panel, so downtime costs were really adding up and costing our company money.

Also, after each blow our maintenance men would spend time checking the circuit for trouble, only to find the outage was caused by excessive heating in the panel.

We discussed the situation with a salesman and he showed us that Fusetron dual-element fuses (Bussmann Mfg. Div.) were cooler operating and would eliminate our trouble. We changed to Fusetron fuses of proper size for safe protection and haven't had any unnecessary shutdowns in a long time.

Our maintenance men like the change. Any outage today indicates trouble, and the men know they are not wasting time when they check the circuit. Because of this most satisfactory experience, we individually protect all our motors with the fuses as well as using them throughout the rest of the electrical system.

By J. W. SANDERS, Chief Electrician, Rosemary Mfg. Co., Roanoke Rapids, N. C.

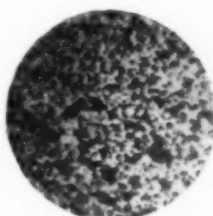
Case 20 - Florida

Scale Control

THE STATE of Florida, like a number of other southern states has water problems. This is especially true in the southern part. Many plant operators either through neglect or unfortunate selection of water treatments find their equipment such as boilers, water towers and evaporative condensers fouled up to the point that operation becomes impossible and in some cases dangerous. At

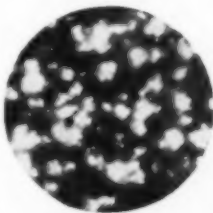


Subox paints are the only American paints made with lead-suboxide. They give extra protection at no extra cost.



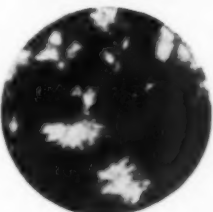
SMALL PARTICLES PENETRATE SURFACE

Maximum penetration is achieved because lead-suboxide is a colloidal pigment. Its film is so dense and impervious that two coats of Subox usually equal three coats of other paints... often one coat of Subox is sufficient.



CHEMICALLY-ACTIVE METALLIC FILM

Lead-suboxide remains chemically active after Subox paint dries. It reacts with the fatty acids of the vehicle to form insoluble lead soaps, and builds up a reinforced protective film of intertwining metal-bearing fibers.



FIBROUS COAT IS STRONG ADHESIVE

The fibrous film of Subox gradually strengthens and replaces the original vehicle film (which otherwise would become brittle), and creates a strongly adhesive protective coating with an inherently longer life than that of other paints.

In addition to its other advantages and economies, Subox also saves on eventual repainting. The need for expensive scraping and repriming is largely eliminated.

Available in wide color range. Write for color card and the brochure "Subox Paints".

Dark areas in above photomicrographs show how pigment increasingly intertwines to form dense, protective film.

SUBOX PAINTS

Subox Inc.

Trade Mark

Established 1924

6 Fairmount Plant
Hackensack, N. J.

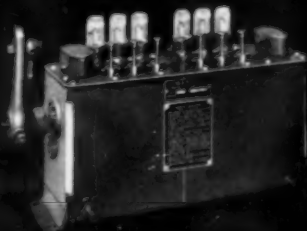
MANZEL

accurate,
controlled,
timed
lubrication

Get the automatic, timed lubrication you need to protect valuable machinery, eliminate downtime, cut maintenance costs. Wide range of Manzel Lubricators and controls, in single and multi-feed units, will solve any lubrication problem. A Manzel field engineer will help select the model you need.



WRITE FOR
COMPLETE
CATALOG giving
specifications and
performance
requirements to meet
any of your
lubricator needs.



Manzel

318 Babcock Street • Buffalo 10, New York



Specialists in metering pumps and lubricators since 1898

these times drastic action becomes necessary.

The American Sand-Banum Co. boiler and cooling system cleaner uses a mechanical method which is both effective and harmless to man and material. Yet, this removes scale and prevents corrosion. Scale removal takes from 48 to 72 hours and keeps the equipment in operation. There have been many cases where scale was so hard that muriatic acid was ineffective but this cleaner did a perfect job.

Case 21 — Georgia

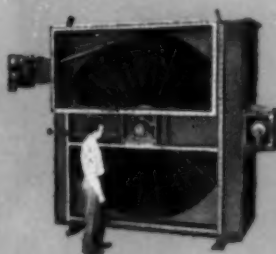
Self-Lubricating Chain

A SOUTHERN textile mill placed American Standard Roller Chain on one wool carding machine and the same size Whitney Self-Lubricating Chain on an identical machine at the same time. The machines were run side by side for four months. At the end of four months, the standard chain had been shortened by one link and adjusted three times — no adjustments were required on the Self-Lubricating Chain. This mill has now replaced all comparable standard roller chain with Self-Lubricating Chain.

Whitney Self-Lubricating Chain is American Standard Roller Chain with unusually high strength and impact resisting sintered steel bushings. These bushings have many minute interconnecting pores which are impregnated with lubricant at the time of manufacture. Under the heat of operation, the lubricant in the bushing expands and flows over the bearing surfaces, providing the vital film of lubrication. As friction and temperature is reduced, the lubricant is reabsorbed by the bushing. This cycle occurs over and over.

Only the necessary amount of lubrication is present on the bearing surfaces. Thus, no excess lubricant is ever present to splatter and spoil textiles or other product, yet the chain is properly lubricated at all times.

Here's what you can do about the high cost of fuel



Get the same heat from less fuel with a

Ljungström® Package Air Preheater

A significant amount of your fuel is used to heat the combustion *air* in your boilers. A Package Ljungstrom Air Preheater raises the temperature of combustion air by recovering the heat from the exhaust gas. In preheated air, the fuel you are now using will burn more completely, and much more of it will be *productive* heat.

Here is an example of what

this means in dollar savings. In one year (1956) a typical Package Ljungstrom installation saved \$17,600 in fuel costs. In some installations the Package Ljungstrom saved enough fuel to pay for itself in two years.

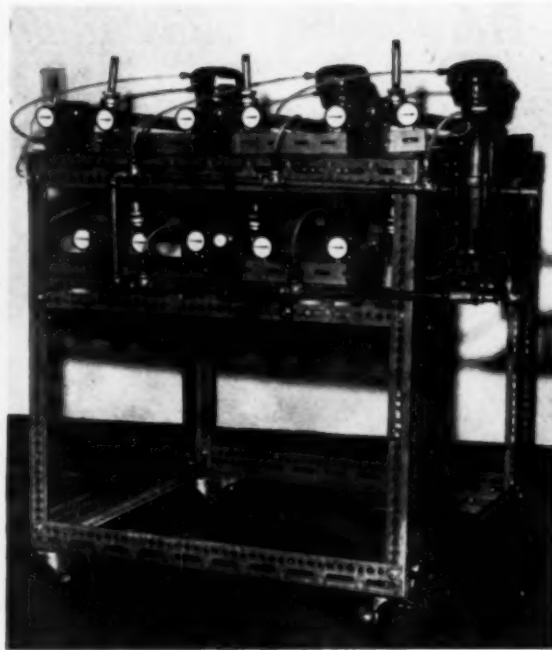
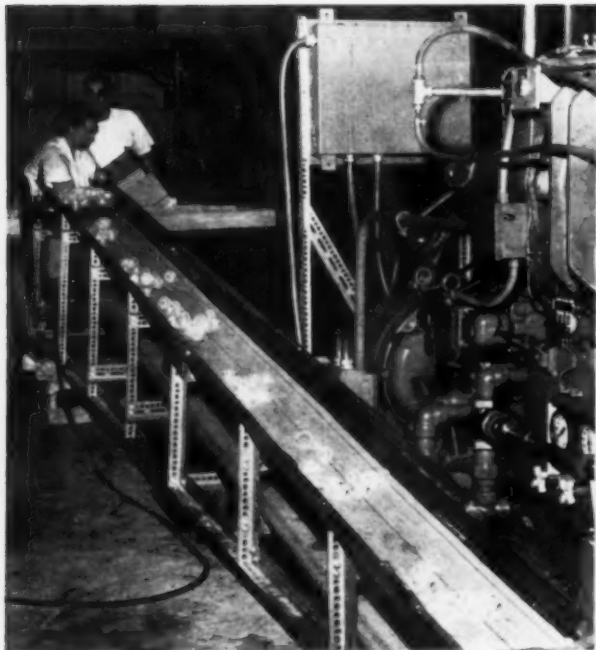
Compact Package design of the Ljungstrom gives you all the

advantages and economies of the Ljungstrom in a preassembled unit. The Package Ljungstrom is available in vertical or horizontal models that are readily adaptable to any plant arrangement.

For further information, write today for the free 14-page Package Ljungstrom manual.

THE AIR PREHEATER CORPORATION

60 East 42nd Street, New York 17, N. Y.



Case 22 — Georgia Plastic Plant

SLOTTED ANGLE Speeds Construction

no drilling . . no welding . . easy bolting

DOWNTIME is costly and when Greyshaw of Georgia, Inc., moved from one location to another larger building within the greater Atlanta area, it was extremely important to them to get back into production as fast as possible.

Their plant is the first completely automatic injection molding plant in the southeast. They produce plastic containers for the food processing and other industries.

Greyshaw found, prior to their move, that Acme Steel's slotted angle was of considerable help in the construction of the portable framework for the water temperature control system shown at right.

Pye-Barker Supply Company of

Atlanta was called upon to assist with arranging and setting up new equipment and providing necessary materials and supplies.

Acme Steel's slotted angle proved to be the fastest and most economical method of framing their equipment. Furthermore, this material was supplied directly from our stock.

The conveyor frame shown (left photo) was built of slotted angle by one man in two hours and the material cost was \$45.00. This effected a saving of time over conventional methods, and possibly reduced material cost.

The slotted angle was also an ideal material for the mounting of the control panel. This is a free

standing unit, but this material could be used with equal success for a wall-mounted panel.

Structures made of this versatile framing material can be tailored to the size or shape desired. The system of holes is engineered in such a way that when pieces are put together the holes line up for easy bolting with no need for drilling or welding.

To make the job of assembly fast and easy, diamond shaped marks are spaced 3-in. apart to insure proper measuring and cutting. A special cutter has a locating pin for positive measuring and makes a square, clean cut with one stroke of the handle. The only other tool needed for installation is a wrench.

Acme Steel's slotted angle comes in two different sizes — standard and heavy duty. The material shown in the photographs is the standard size. Both sizes are available in either 10 or 12 ft lengths, packaged ten lengths to the bundle and including 75 nuts and bolts. The material is a cold rolled steel with an electrogalvanized coating that requires no painting.

By R. S. CONNATSER, Pye-Barker Supply Company, Atlanta, Ga.



Don't wait for production to stretch your electrical system

POWER-UP

for distribution system flexibility you can depend on

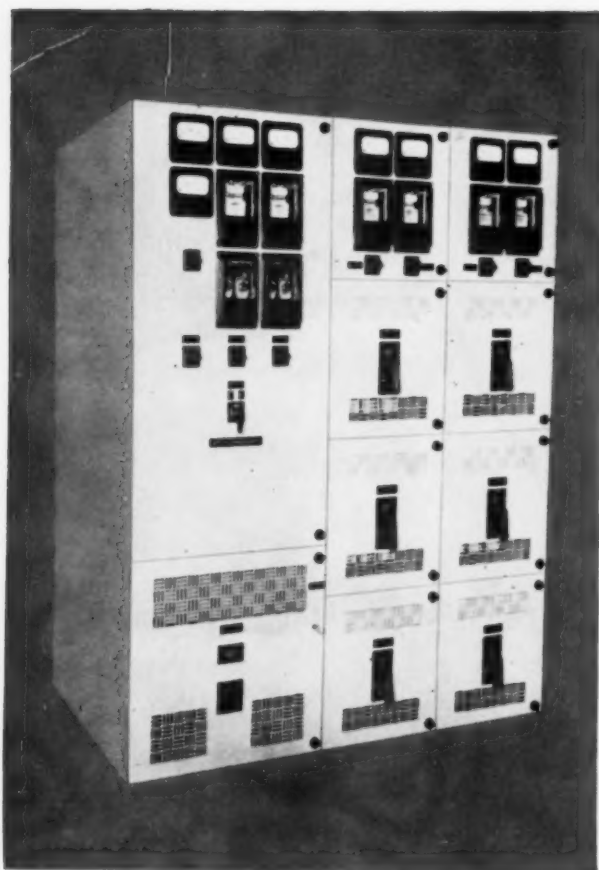
Take a good look at the electrical distribution system in your plant. As production becomes more automated, power needs increase and allowable voltage tolerances grow smaller. In fact, if your plant is average, kilowatt consumption is increasing 8% per year. You can't wait for production to demand electric power—your POWER-UP program must start today —

J-96117

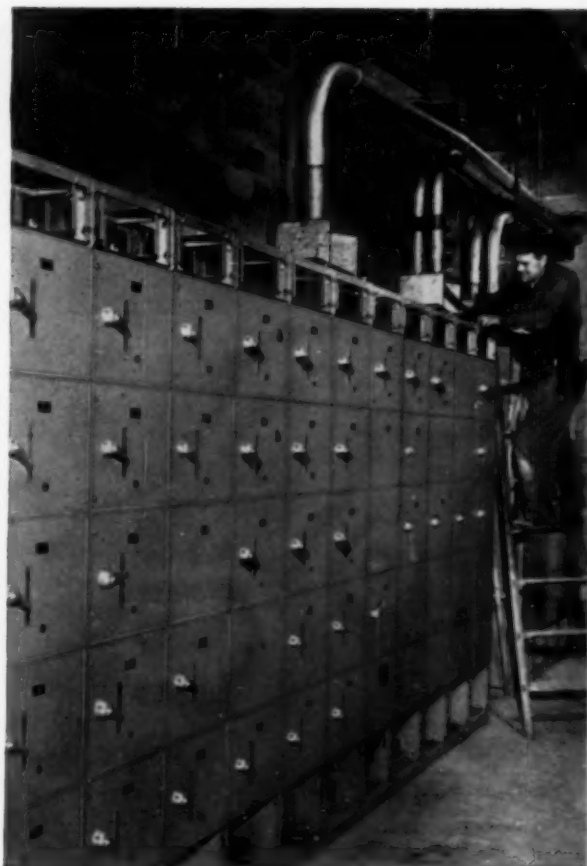


YOU CAN BE SURE...IF IT'S Westinghouse

Here's how a ***POWER-UP***
program can give
electrical system flexibility
to meet production requirements



WESTINGHOUSE LOW-VOLTAGE METAL-ENCLOSED SWITCHGEAR with drawout DB Circuit Breakers provides superior power circuit protection and flexibility in operation and maintenance. Standardized design with "custom assembled" features meets all modern application requirements without special design or engineering costs.



WESTINGHOUSE CONTROL CENTERS provide flexibility unlimited by floor arrangements and number of starters in use. Versatility is offered by quick addition or removal of structures and easy relocation or replacement of starters. Compact centralized control in one basic design assures coordinated motor operation.

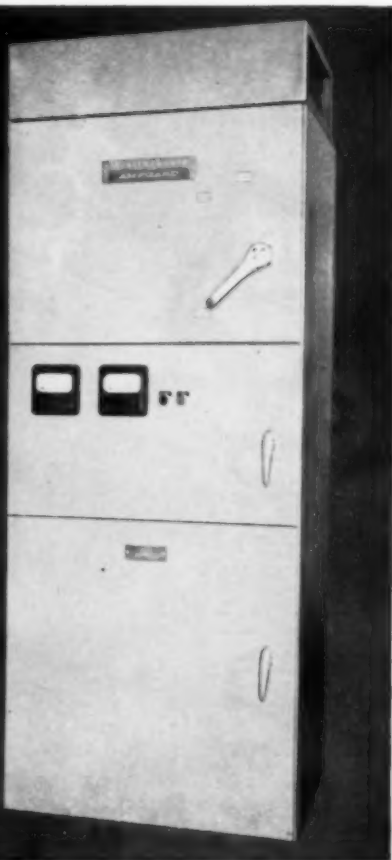
What happens when a distribution system can't be stretched another inch? Additional machines can be the reason — changing production requirements can cause it, too. The only answer is an adequate distribution system with the built-in flexibility to meet your future requirements.

That's why it is important that you call on Westinghouse industry-experienced engineers now, for help in planning your POWER-UP modernization program. For convenient, economical, machine-site power, Westinghouse can furnish the assistance and the work-together equipment you need to do the *complete* job.

A Modern Westinghouse Distribution System assures you the advantages of convenient layout — easy maintenance, too. There's profit in planned power. Call your Westinghouse salesman. Or, write Westinghouse Electric Corporation, 3 Gateway Center, P.O. Box 868, Pittsburgh 30, Pa.

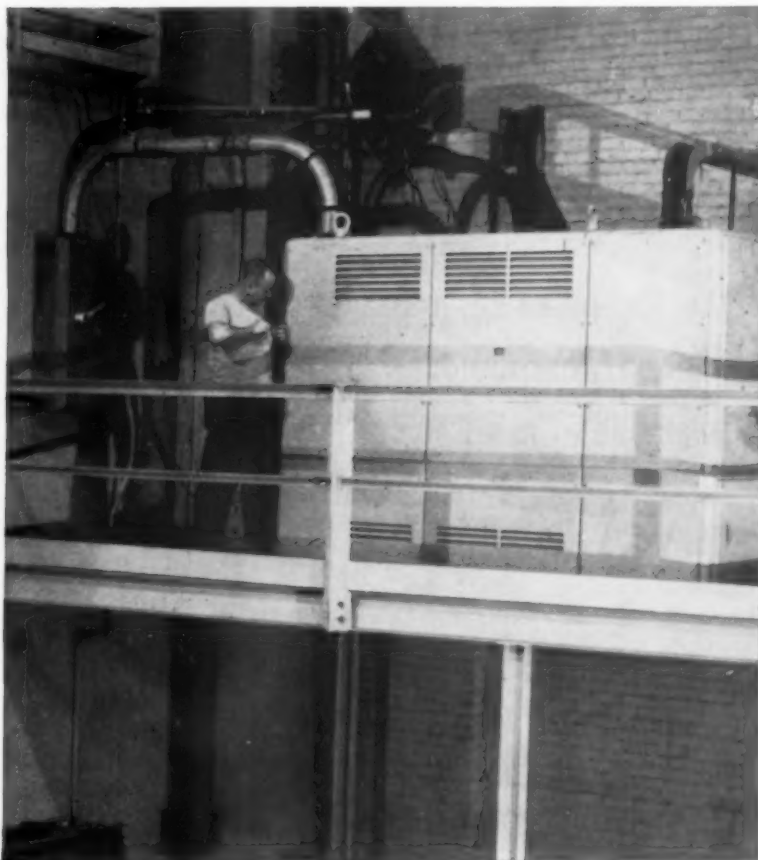
J-96108

YOU CAN BE SURE...IF IT'S **Westinghouse**

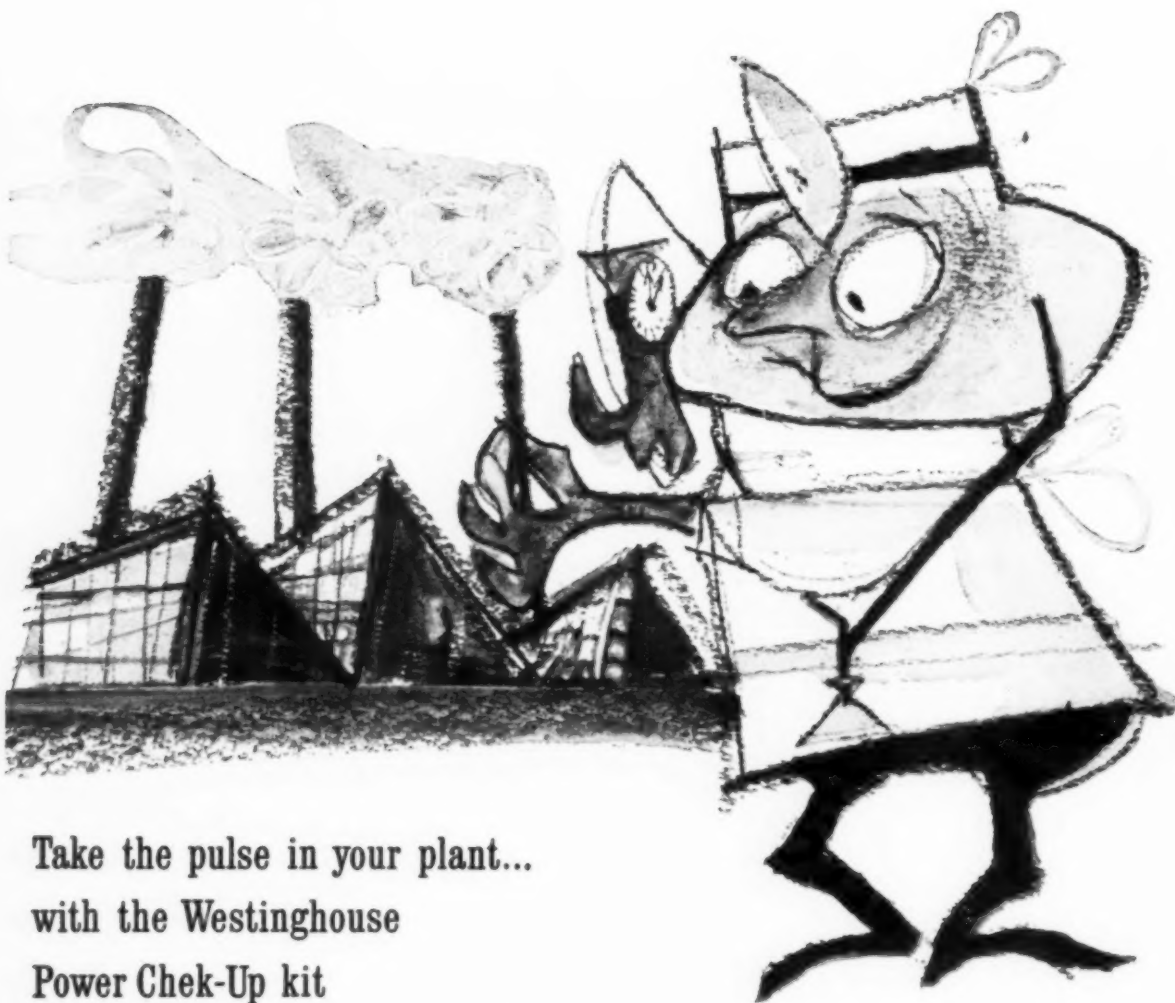


WESTINGHOUSE AMPGARD* HIGH-VOLTAGE STARTERS with standardized structures and separate power bus (mounted on top) can be grouped together or mounted separately to meet changing production requirements. In any location, operator safety is assured with new isolating switch and segregated high voltage compartments.

*Trade-Mark



WESTINGHOUSE POWER CENTERS at the load are geared for today's production with growth flexibility for tomorrow's requirements. Dry-type power centers eliminate fire hazard. Location close to load shortens secondaries, reduces line loss, gets more work from motors. Quiet operating units are 20 to 40 percent lighter than liquid-filled... suitable for easy balcony mounting.



Take the pulse in your plant... with the Westinghouse Power Chek-Up kit

Production problems because of low voltage? Interrupted service? Maintenance costs too high? . . . Then your plant needs an electrical check-up . . . 65% of all plants do! It's easy to see where electrical inadequacy is costing you money when you use the new Westinghouse Power Chek-Up Kit.

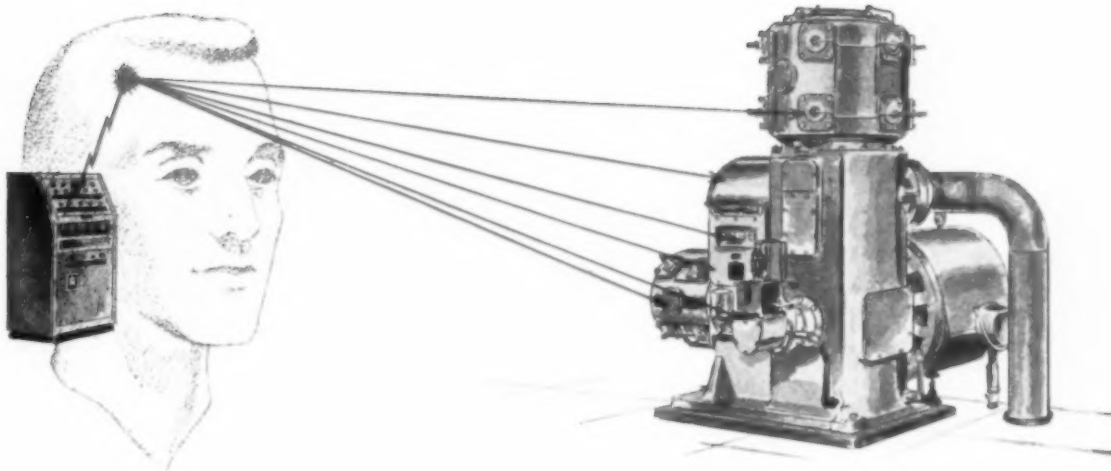
The necessary forms, an easy-to-work slide rule and an instruction book are all included. Ask your utility or Westinghouse salesman for details on how to get a kit.

J-96120



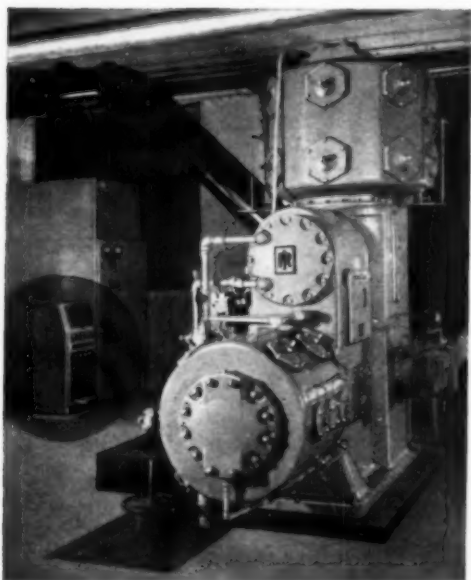
YOU CAN BE **SURE**...IF IT'S Westinghouse





Making a Compressor "Think for Itself"

New *Tendomatic* control brings automatic supervision
to the COMPRESSOR PLANT



"Tendomatic control of this Ingersoll-Rand type XLE two-stage heavy-duty air compressor assures maximum protection of capital investment, maximum manpower utilization, continuity of production and lower maintenance expense.

INGERSOLL-RAND's new "Tendomatic" control is like a *tireless attendant*, who keeps checking the operation of your compressor every second.

All you need to do is push the start button; the "Tendomatic" does everything from then on. Its built-in safeguards eliminate routine inspection and supervision, detect trouble before it can do any harm to the compressor, and put all maintenance on a low-cost preventive basis.

This completely automatic control system keeps an eye on air pressure and temperatures...lubricating oil pressure and temperature...the cylinder lubricator...and the float level in the condensate trap. It watches for leaking valves and mechanical failure of running parts.

Any time there is a variation from normal operation, the "Tendomatic" identifies the nature of the malfunction and gives audible and visible warnings. If the warnings are ignored or forgotten, "Tendomatic" shuts down the compressor before any damage can result.

To plan now for future savings, ask your Ingersoll-Rand representative for complete information on the new "Tendomatic" compressor control.

"Tendomatic" control is available only on
Ingersoll-Rand air and gas compressors

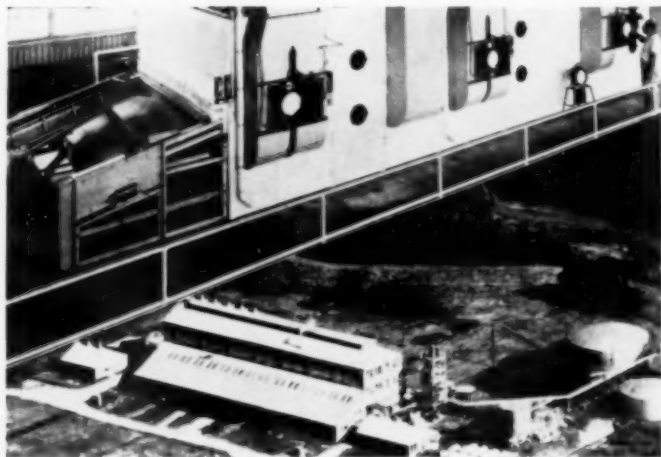


Ingersoll-Rand
1-872 11 Broadway, New York 4, N. Y.

GAS & DIESEL ENGINES • PUMPS • AIR & ELECTRIC TOOLS • CONDENSERS • VACUUM EQUIPMENT • ROCK DRILLS

Humidity Conditioning

PRODUCT required slow, even removal of moisture at pre-determined rates. Automatic humidity conditioning equipment selected has only two moving parts. There is no carryover of absorbent solution into delivered air stream.



AVAILABILITY of a suitable black strap molasses, economically priced, plus the convenience to both rail and water transportation were some of the determining factors for locating an active dry yeast plant at Belle Chasse, Louisiana.

Even before initial production began, however, the Red Star Yeast and Products Company realized that the humid, semitropical climate of this region below New Orleans would make the final drying operation difficult during certain seasons of the year.

Satisfactory yeast drying requires the slow, even removal of moisture at pre-determined rates. Otherwise the delicate outer shells of these living organisms might be ruptured, destroying their use. Economic operation of the dryer itself necessitates a constant substantial production rate.

For these reasons a large capacity, chemical-type humidity conditioning system was installed to implement the dryer, weather-proofing its operation against the vagaries of outside air conditions. Product quality and production rates are thereby protected and year-round satisfactory operation is obtained.

Dryer Operation

A section of the dryer is shown above. Yeast is deposited by the conveyor on the head of the belt

at about 70% moisture by weight. Final moisture content at the outlet of the dryer is 7 to 8%, unless specified differently by the customer.

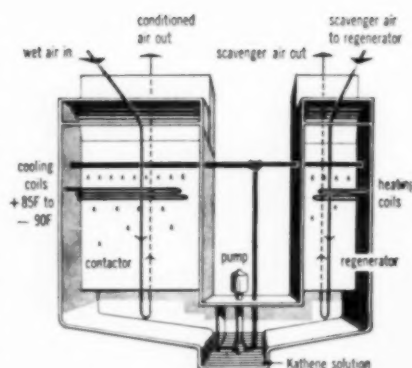
Air temperature and velocity in the dryer can be regulated by the foreman in charge. Depending on weather conditions he can operate the dryer on entirely fresh outside air, recirculated air or a combination of both. In the final portion of the dryer, he can use entirely fresh outside air, treated or untreated by the humidity conditioning equipment, recirculated air or innumerable combinations of the two.

Low pressure steam is used for heat in the dryer sections. The temperature of the yeast itself, a very critical factor, is recorded as it passes through each section. Air temperature is also recorded.

Conditioning Equipment

The humidity conditioning equipment installed to make this drying operation independent of outside weather conditions is a Kathabar package unit manufactured by Surface Combustion Corporation. Elements of its operation are shown in the schematic drawing.

Air to be conditioned passes through the contactor, where the absorbent solution, called Kathene, removes moisture from it. The amount of dehumidification depends upon the density of the



solution and its temperature. The former usually remains constant and the latter is automatically controlled by the temperature and rate of coolant flow in the coils.

The solution pump constantly lifts the absorbent solution from the unit sump back to the flooding nozzles in the contactor section. About 10-15% of the total solution is also sprayed constantly in the regenerator section. When the solution becomes diluted, steam is automatically directed to the coils in the regenerator. The solution sprayed in the regenerator is thus heated, causing it to release the excess moisture absorbed in the contactor section. This moisture is purged to the outside by a scavenger air stream.

By **STANLEY APPLEGATE**, Plant Manager, Red Star Yeast and Products Co., Belle Chasse, Louisiana.

"SPECIAL" Welding Fittings

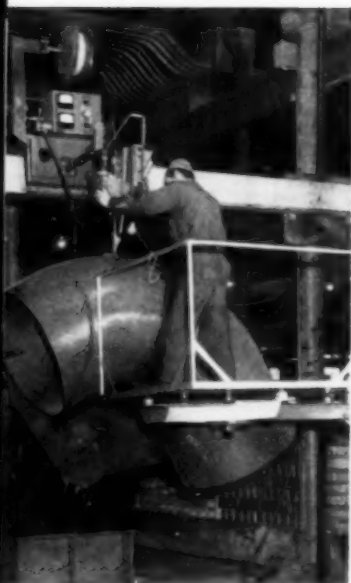
by **MIDWEST**

"SPECIAL" DESIGNS
"SPECIAL" MATERIALS
"SPECIAL" QUALITY
"SPECIAL" DELIVERY

Special gauges and instruments are used to make sure that we have complied with the extremely close tolerances often required on stainless fittings. Here wall thickness and concentricity were held within extremely close limits throughout the fittings.

The exclusive Midwest method of manufacture—much more versatile and flexible than any other—enables us to make almost any type of special welding fittings to the most rigid specifications. Midwest makes welding fittings from plate . . . usually much easier to get than pipe, particularly if the material is special. That expedites delivery. Closer tolerances are inherent in the Midwest process, and quality control is always beyond code requirements.

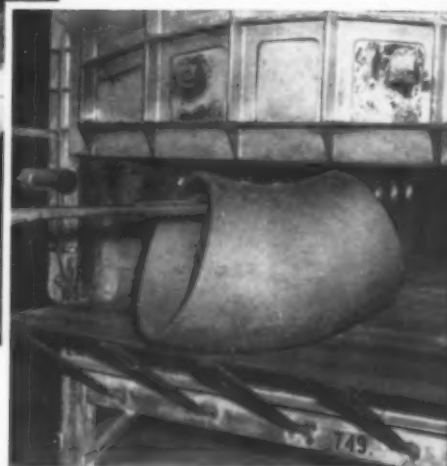
Even if you use only standard fittings, the exceptional quality of Midwest fittings can be important to you. Ask your Midwest distributor or write us for new Bulletin 5801.



36" O.D. 90° elbow with 16" tangent on one end being welded by an automatic submerged arc machine. Material is A-201 carbon steel.



Stainless-clad elbows undergoing ultrasonic inspection to check bonding of material and quality of weld. Since plate is often the only form in which clad material is available, the Midwest process is able to produce the most comprehensive range of clad fittings—and to do so promptly.



Special 24" x 21" 45° reducing elbow made of 1" thick 1¼% chrome ½% moly steel ready for heat treating furnace.

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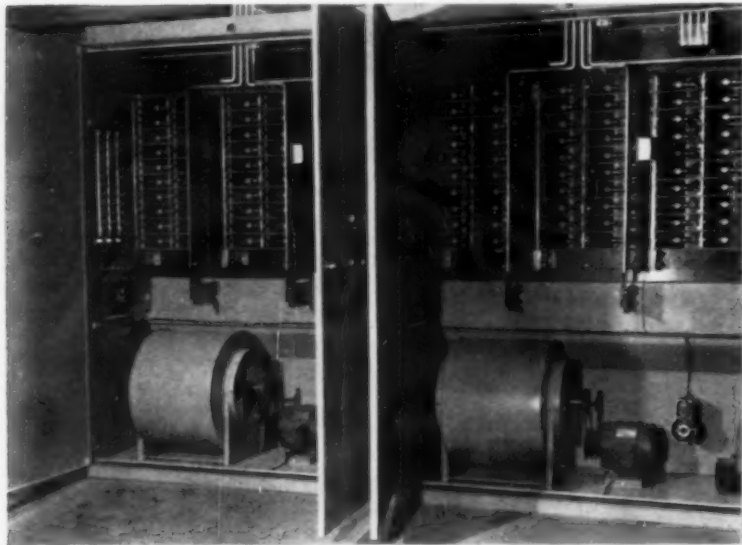
POWER TRUCKS save 80 man-hours daily for Anniston Foundry, Anniston, Ala. Two trucks handle 450,000 lb in 8 hours, giving dependable service under severe foundry conditions.

The main job, and toughest one, is transporting charging buckets. Loaded, they weigh 9,620 lb each. Buckets are carried on skids by Elwell-Parker trucks between make-up points and foundry cupolas. Emp-ties are returned for reloading. Runs are about 100 ft. Trucks are also used for such other jobs as carry-ing cast pipe from foundry to cleaning room, and scrap from cleaning room for remelting.

On these operations, each truck has released five laborers for more productive work. Previously, raw materials were manually loaded and pushed on hand trucks along narrow gage tracks. This slow, cumber-



some method often caused expensive delays. Now, speed and flexibility of trucks keep movement of materials on schedule at all times. Also the trucks perform with ease and safety, operations that were constantly hazardous when attempted by workmen.



Case 27 — Ala. Plant

Rectifier for Potline

AN INCREASE in direct current capacity, required on the experimental aluminum potline at an Alabama plant necessitated the recent addition of an Allis-Chalmers 15,000-ampere, 65-volt, dc germanium rectifier unit. The unit

was added to six similarly rated existing units of another manufacturer. The two 7,500 ampere compartments, which make up the 15,000 ampere unit, are shown in the accompanying picture.

A recirculating forced air cooling system, using an air-to-water heat exchanger to cool the air is incorporated in the latest unit. Since the germanium rectifier elements are air cooled, there are no water or liquid connections to

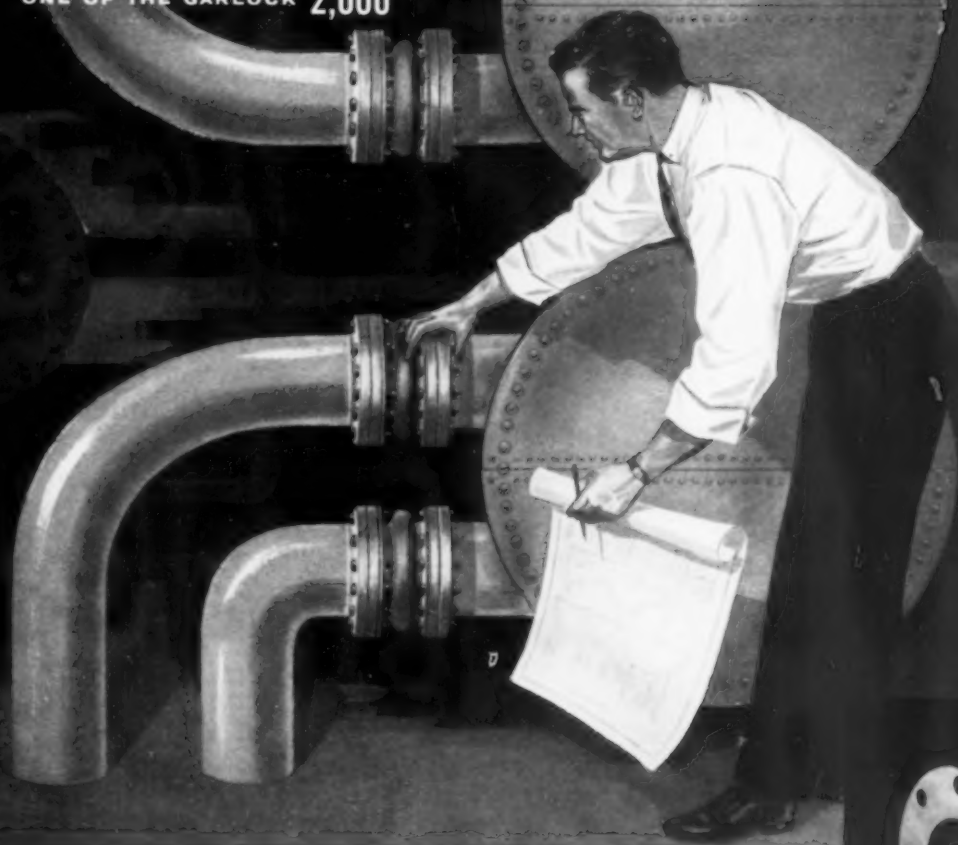
make or break when elements are replaced. With this arrangement, maintenance is simplified and downtime is reduced.

Another advantage in this type of cooling is that there is no problem of condensation. The water piping is all located at the bottom of the rectifier compartment, away from the main electrical bus work. Since the recirculating air is cooled by the air-to-water heat exchanger, the compartment air temperature is not dependent upon outside ambient air conditions.

The germanium rectifier elements are arranged on both sides of an air plenum chamber with the motor driven blower forcing the air through the air-to-water heat exchanger, on through the germanium rectifier element cooling fins and then back to the suction side of the blower.

The compartment is complete with germanium rectifier element protective fuses, a fuse monitoring system for alarm and trouble shooting purposes and necessary auxiliary equipment. The three-phase ac bus enters each rectifier compartment at the top from the outdoor, oil immersed, self cooled rectifier transformer. A separate secondary winding is used for each 7,500 ampere compartment.

ONE OF THE GARLOCK 2,000



4 Reasons Why It's Good Piping Practice To Use Garlock Rubber Expansion Joints

- 1. PREVENT STRESSES.** Piping systems expand and contract with temperature changes. Garlock Expansion Joints act as a "breather" . . . compensate for expansion and contraction.
- 2. ELIMINATE VIBRATION AND NOISE.** Pumps, compressors, engines, and pressure surges in pipe lines create vibration and objectionable noises. Garlock Rubber Expansion Joints act as an absorbent cushion . . . reduce vibration and insulate against transfer of noise to other parts of the building.
- 3. COMPENSATE FOR MISALIGNMENT.** Piping and mechanical equipment often moves out of normal alignment during operation due to wear, load stresses, or settling of buildings. Garlock Rubber Expansion Joints compensate for this and prevent possible breakdowns of equipment. They also make installation easier since alignment of piping and equipment need not be quite as accurate when expansion joints are used.

- 4. REDUCE FLANGE BREAKAGE.** Undue stress caused by misalignment, vibration, expansion or contraction of piping or equipment, will break the metal connecting flanges. Garlock Rubber Expansion Joints relieve such stresses.

AND, remember Garlock Rubber Expansion Joints outlive metal ones . . . do not crack, corrode, lose shape, or require gaskets. Moreover, rubber joints withstand higher pressures too. Available for pressures up to 125 psi. Maximum service life at temperatures to 180° F. Get complete data on this important member of "the Garlock 2,000" . . . two thousand styles of packings, gaskets, and seals for every need. See your local Garlock Representative or write for folder AD-137.

The Garlock Packing Company, Palmyra, N. Y.

For prompt service, contact one of our 30 sales offices and warehouses throughout the U.S. and Canada.

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Packings, Gaskets, Oil Seals, Mechanical Seals, Molded and Extruded Rubber, Plastic Products



TYPICAL APPLICATIONS FOR GARLOCK RUBBER EXPANSION JOINTS

Air Conditioning Systems
Air Ducts
Air Injection Lines
Ballast Lines of Ships and Barges
Blower Lines
Brine Tanks
Dry Vacuum Lines
Connecting Turbines and Condensers
Jet Condensers
Paper Stock Lines
Pump Lines, Discharge and Suction
Ventilating Systems
Chilled Water Lines
Hot Water Lines to 180° F.
Circulating Water Lines to Condensers





Case 28 — Southern Railway

Wrought Iron Air Lines

A LARGE SCALE extension of compressed air line facilities by the Southern Railway has stepped up the charging of air brake equipment on freight trains. Instead of charging a long freight train from one end only, Southern, by extending its compressed air lines and making air available at thousand foot intervals through the yard, is able to charge a train and move it as much as forty-five minutes to an hour and a half quicker.

Because of its ability to withstand corrosive and vibratory abuse, more than 560 tons of extra heavy wrought iron pipe in sizes 2", 2½" and 3" were used in Southern's important yards. (Note 4-D wrought iron lines along ties in photo.) The pipe has a tightly adherent oxide film, which forms on the interior pipe wall, eliminating the possibility of loose scale plugging air outlets and it has the ability to withstand tremendous vibration causes by turning on and off air charging equipment.

Case 29 — Maryland

Jig Saw Cuts Walls

A NEW JIG SAW has quickly eliminated hours of hand sawing through several layers of sheet metal and wood backing for the firm of E. Lehnert & Sons, Inc. of Baltimore.

Lehnert is a truck body manufacturer, and recently they took on the job of installing refrigerating exhaust louvers in delivery trucks for a local dairy. Since the trucks were already built, it was



necessary to cut a large opening in the side of each — through two layers of 26-gauge galvanized steel and ¼" exterior fir ply with ¾" oak rail reinforcement on one side, and through two layers of 20-gauge cold roll steel backed with oak rail on the other. In addition, there was another sheet of 26-gauge galvanized in the middle.

It was a long job by hand on the first few trucks, complicated by the need to maneuver the hacksaw into very tight, deep corners. On advice from a Black & Decker salesman, Mr. Lehnert gave the new No. 11 Jig Saw a try, and bought it on the spot.

As shown in the photograph, one of the features of the Jig Saw is its adjustability for bevel cuts up to 45° on either side of the tool. To make cramped inside cuts, the shoe is set at an angle so that the saw can move freely. Cutting time on the job, which employs workmen on a high hourly scale, has been reduced from hours to minutes.

Case 30 — W. Va. Steel Mill

Brush Shunt Hermetically Sealed

DEVELOPED to defeat the long-standing problem of shunt corrosion by splashes from corrosive electrolytic baths, Ohio Carbon's new brush provides complete protection for the shunt. Special insulation has been applied, extending from terminal to brush and sealed at both ends. The improvement was created for, and is now in use on the tin line facilities at Jones and Laughlin Steel Corporation in Aliquippa, Pa., and Wheeling Steel Corporation in Wheeling, West Virginia.

Application of the insulated shunt immediately decreased brush replacement costs for both users. The new shunt protection is a seamless tube of highly flexible and highly insular material, sealed at brush and terminal so as to completely protect the copper shunt.



**REYNOLDS ALUMINUM
SUPPLY COMPANY
offers you**

**9 LIFE LINES
in the South**

Reynolds Aluminum Supply Company's nine industrial metals warehouse facilities may well be the answer to your supply problems. Production delays from lack of metals or metal-working equipment pass when you depend on the extensive Reynolds Aluminum Supply Company life-lines. These metals warehouses, located in nine major Southern industrial cities, will feed metals of every description — aluminum, steel, copper, stainless steel — into your plant in any quantity when needed. Metal slitters, shears, decoilers, roll formers, corrugators and plate saws are strategically located in several of these areas to provide you complete metals supply and service. And you can count on fast and accurate delivery. These dependable facilities offer a one-stop supply line that represents a vital life-line to industries throughout the South. For the life of your business, call Reynolds Aluminum Supply Company today!

ALUMINUM MILL PRODUCTS

- sheet • plate • coil • fasteners
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STEEL FLAT SHEETS

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Double Feature Cuts Cost 75%

A **MANUFACTURER** of heating device controls in St. Louis, Mo., was dissatisfied with the excessively high cost of manufacturing a two-part thermostat control.



The assembly consisted of a 2-in. long steel shaft to which a control disc was silver soldered. The unit had to be heat treated, and therein was the problem.

Heat treating after the silver soldering operation caused melting out of the alloy and destruction of the joint. But by reversing the operation, and heat treating first, the steel was annealed during the subsequent soldering step.

Four operators were required to run the furnace line that was producing these controls. Rejects were high, as was alloy consumption. Time studies revealed that the entire operation was exceedingly costly.

A local technical representative of the Eutectic Welding Alloys Corporation was requested to help with the problem. He developed a very satisfactory and economical production technique.

After the control disc is pressed onto the shaft, a drop of silver alloy paste is preplaced on the joint. This paste consists of high strength Eutecrod 160 in 160 mesh form in a balanced emulsion of Eutector 1600-T flux. This combination assures complete activation at the precise bonding temperature, giving a neat, completely bonded joint. The thin-flowing rod alloy is drawn completely

through the joint by capillary action, giving a joint strength of up to 55,000 psi.

After preplacement of the alloy, the assemblies are conveyed through a furnace at 1600 F for fifteen minutes. Before leaving the furnace, the parts receive a three minute oil quench. Thus silver brazing and heat treating are performed in one continuous operation.

The benefits of this system are several. First, instead of four operators, the new method re-

quires only one. Next, there is no damage to the spring tension qualities of the shaft, as had previously occurred. The tension is needed for a tight pressure fit of the plastic control knob.

A third savings is in the sharp decline in rejects; they virtually disappeared. And, finally, the stronger product was actually made with considerably less alloy per joint.

On an overall basis, the new method reduced the manufacturer's unit cost by over 75%.



Case 32 — Florida Plastic Plant

Turntable Jig Speeds Assembly

TAKING A LEAF from the book of the aircraft manufacturers from whom their models are copied, production men at Jacksonville Metal & Plastics Co., Jacksonville, Florida, designed a turntable jig to speed cementing operations on the plastic super "C" Constellations produced for the home ornament and novelty trade.

Previous methods used individual clamping units which meant extra handling and slower production. Now, an easy-to-use turntable jig is set adjacent to a cementing station. It can hold 8

plane assemblies, and each operator handles two turntables. By touching each half of the high impact styrene plane assembly to the cementing pad which is saturated with perchloroethylene methylene chloride solvent, then placing the two halves together and setting the assembly in one of the quick operating clamps, the operator completes the assembly in a fraction of the time previously required.

Not only does the turntable jig speed production, but it also assures uniform pressure during curing.

Lowering Operating Costs—Increasing Plant Efficiency

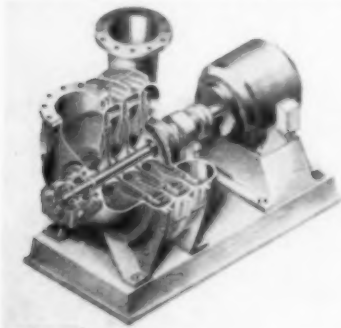
The use of air offers great prospects for increasing industry's productive capacity.

—Thomas Alva Edison

A Prophecy Comes True

The noted inventor also remarked if he had his life to live over, his field of specialization would be air in the service of industry. More than a quarter century ago, engineers for U.S. Hoffman followed Edison's suggestion. Pioneering in air appliances, they developed heavy duty stationary and portable industrial vacuum cleaning systems. Today, those early Hoffman machines as well as modern stationary and portable vacuum cleaning units are in use in thousands of plants. Cleaning hard to get at areas, reclaiming materials or protecting the finish and quality of semi-finished products, they are a significant factor in lowering operating costs and increasing plant efficiency.

Lifetime Trouble Free Operation



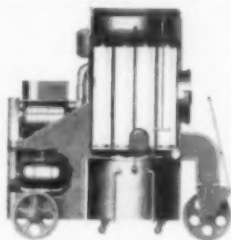
Heart of all portable and stationary vacuum cleaning systems is the centrifugal exhauster which produces the vacuum.

Sturdy, one piece cast aluminum impellers are statically and dynamically balanced. There are no internal wearing surfaces. Operation is efficient, trouble-free for the life of the machine.

Heavy Duty Portable Equipment

Typical of the eight standard heavy duty portable units ranging from 1½ to 15 HP is the powerful two sweeper Hoffco-Vac #75. Compact construction and streamlined design allow for easy maneuverabil-

ity. All units have large filtering areas to insure complete and effi-



cient collection of the finest dust particles. Parts are readily accessible for inspection and servicing.

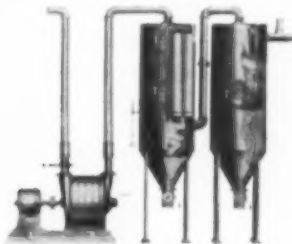
Installation of permanently fixed piping extends the machine's capabilities to otherwise virtually inaccessible areas.

Send for Literature P8.

Unlimited Cleaning

Hoffman permanently installed stationary vacuum cleaning systems permit simultaneous cleaning operations in widely scattered points throughout the plant with collection of material at one central location. This effectively eliminates expensive manual handling and disposal.

The system includes a more powerful and larger centrifugal exhaust-



er than employed in portable units. Heavy duty dust separators collect the material and large filtering areas

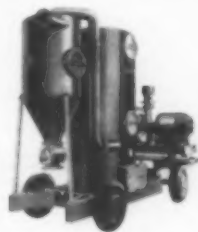
insure thorough cleaning of the air. Hoses for cleaning are inserted into strategically located inlet valves in the piping system and are conveniently located throughout the areas to be vacuumed. Stationary equipment helps prevent product contamination and cuts down time to a minimum.

In addition, these versatile systems salvage valuable materials, insure better housekeeping and encourage operating efficiency.

Send for Literature AB 100.

Equipment For Special Needs

Hoffman designs and manufactures special purpose vacuum cleaning equipment such as this unique trailer unit used to remove catalyst from "cat crackers" during turnaround. Built for the Texas Co., it is in use at one of the world's largest oil refineries at Port Arthur, Texas.



A Genuine Competitive Advantage

Wherever operating costs make the big difference in profits, Hoffman industrial vacuum cleaning systems offer many genuine competitive advantages. They are extensively used in food and chemical processing, textiles, precision component manufacturing and assembly and just about every type of manufacturing plant. Whatever your vacuum cleaning requirements, Hoffman can design and engineer systems to do a thorough and efficient job.

Free Booklets

Ask for a free engineering survey to determine the most economical Hoffman system for your plant. Send now for any of these helpful free booklets.

Kindly send the following FREE booklets.

**U.S. HOFFMAN
MACHINERY CORPORATION**

Air Appliance Division
103 Fourth Avenue
New York 3, N. Y.

☐ P8 — How Portable Vacuum Cleaning Systems Cut Costs, Increase Plant Efficiency.

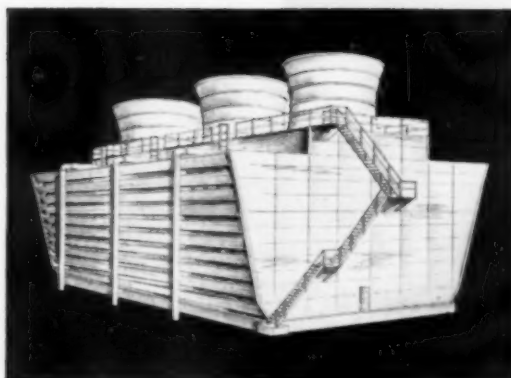
☐ AB-100 — How Stationary Vacuum Cleaning Systems Cut Costs, Increase Plant Efficiency.

NAME _____ TITLE _____

COMPANY _____

ADDRESS _____

New Class 600
MARLEY
Double-Flow
has the
Profile
with a Purpose



Comprised of a combination of "active" angles, the contour of Class 600 cooling towers is completely functional with positive influence on performance and operation. Each angle has its specific purpose and, in conjunction with the others, creates additional advantages.

Louver Angle: The 42-inch louvers are positioned on 3-foot centers at an angle of 40° from horizontal. This arrangement readily admits more air to do more cooling—with inherent lowering of static drop, higher working velocities in the fill become completely practical. It increases the atmospheric performance potential (always greatest in cross-flow towers) and it eliminates splash-out.

Structural Angle: The 10° angle outlined by the louver posts is of equal importance. It makes possible uniform fill width or uniform air travel at all levels in the cooling chamber. Result: more performance per cubic foot of structure gained through efficient air utilization.

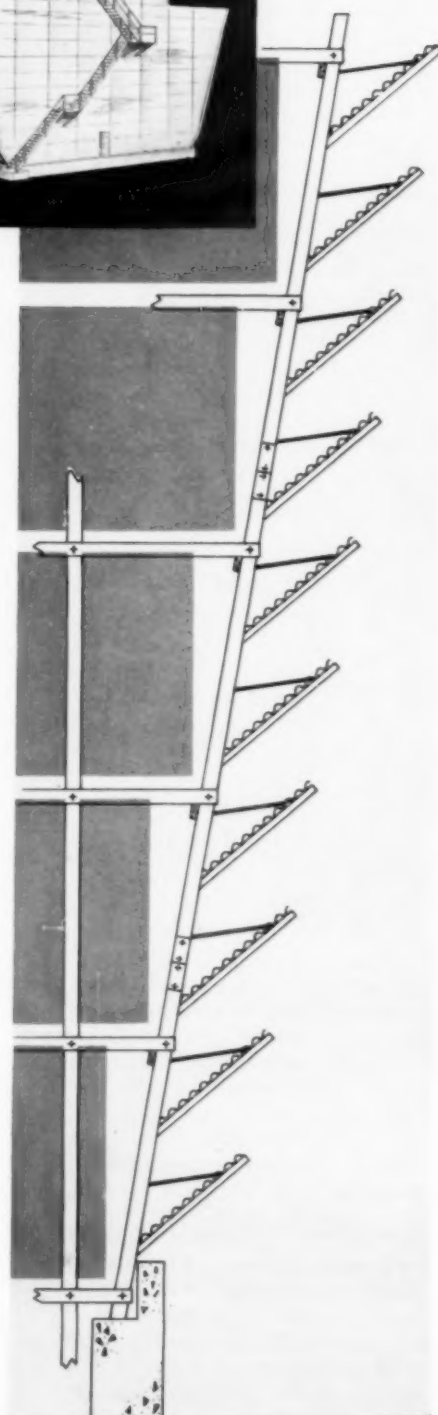
Fill Angle: With a uniform fill-to-louver distance maintained at every fill story, Class 600 Double-Flows set up an effective barrier against icing. The normal water travel creates a continuous curtain of water between fill and louvers without splash-out. There are no non-functional voids so the heat of the water prevents formation of sheet ice and blocking of air entrance.



Patent Pending

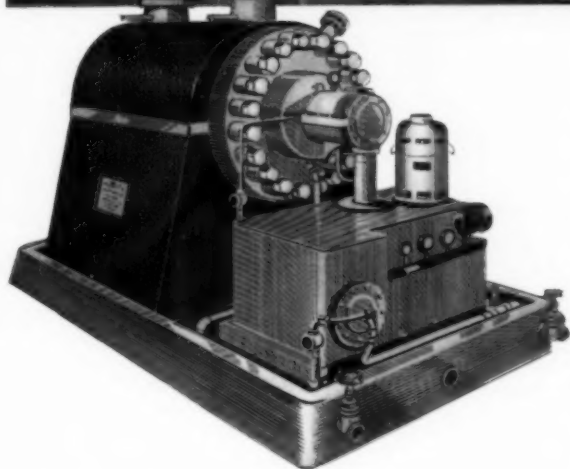
The Marley Company

Kansas City, Missouri





*...a modern
steam plant
must!*



PACIFIC BOILER FEED PUMPS

CONTINUOUS POWER... a *must* in Southern California Edison's giant El Segundo steam station. Three Pacific boiler feed pumps were placed in operation for unit No. 1 in 1955. Two more Pacific pumps were selected and went on the line for unit No. 2 in 1956. The combined generating capacity of the two units is 350,000 kilowatts. These Pacifics, each delivering 685,000 lbs./hr. of 360°F. feed water at 2350 PSIG, unfailingly serve Southern California Edison's El Segundo plant needs. Whenever continuous boiler feed service is an absolute must... then nothing but the best, most dependable service will do... Pacific Boiler Feed Pumps!

Write for Bulletin 122

PACIFIC PUMPS INC.

HUNTINGTON PARK CALIFORNIA

Offices in all Principal Cities



BF-26



Case 33 — Georgia Paper Mill

Water Recirculated for Log Flume

RAYONIER, INC. at Jesup, Georgia uses 16,000 gallons of water per minute in its log flume. Unless the flume water could be treated to remove the bark and sand, it could not be re-circulated.

In plants of this type, the logs from which pulp is made are delivered by rail or truck and stored on the ground in huge piles. As required, the logs are pushed into a log flume where rapidly moving water conveys the logs to a jack-ladder conveyor which picks up and transports them to the barking drums.

The consulting engineers, Ebasco Service, Inc. designed the necessary cleaning plant, using Jeffrey Manufacturing Company equipment.

The system consists of two channels, each equipped with a bark removal screen and a grit remover. Each channel is approximately 65' long, 6'6" wide and 12'4" deep. Cleaned water at the end of the channels flows over weirs into a well where it is pumped back to the front end of the flume.

Each bark remover consists of a water screen placed at an angle of 18 degrees with the verticle (see photographs). This screen consists of moving panels covered with 10 gauge galvanized screen wire with $\frac{1}{2}$ " openings, fastened to heavy chain running in steel guides. Each screen is equipped with special lifting blades designed to remove 5 tons per hour of bark, and is driven by a 2 hp. two speed motor.

After the screen panels have passed over the head shaft, water sprays wash the bark into a trough with a perforated bottom. This trough is equipped with a scraper conveyor which conveys the de-watered bark to a second conveyor which carries it to the boiler room for fuel.

Each channel is equipped with a heavy-duty grit collector consisting of two strands of heavy chain to which are attached heavy angle buckets on 5' centers. As the buckets drag along the bottom of the channel they collect the grit and convey it up an incline and discharge it into a trough with a

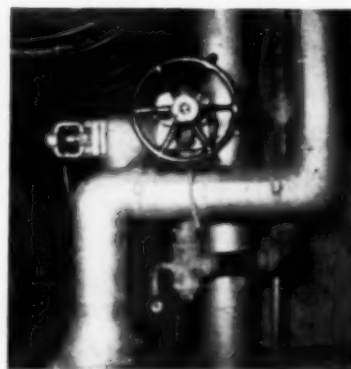
perforated bottom. This trough is equipped with a scraper conveyor which conveys the sand to storage piles for use as fill around the plant. Each grit collector is designed to handle 9 tons per hour of sand and is driven by a 5 hp motor.

Case 34 — N. C. Utility

Water Seal Loop

THE PHOTO shows the water seal loop in the atmospheric drain line from aftercondenser on our steam jet air ejector.

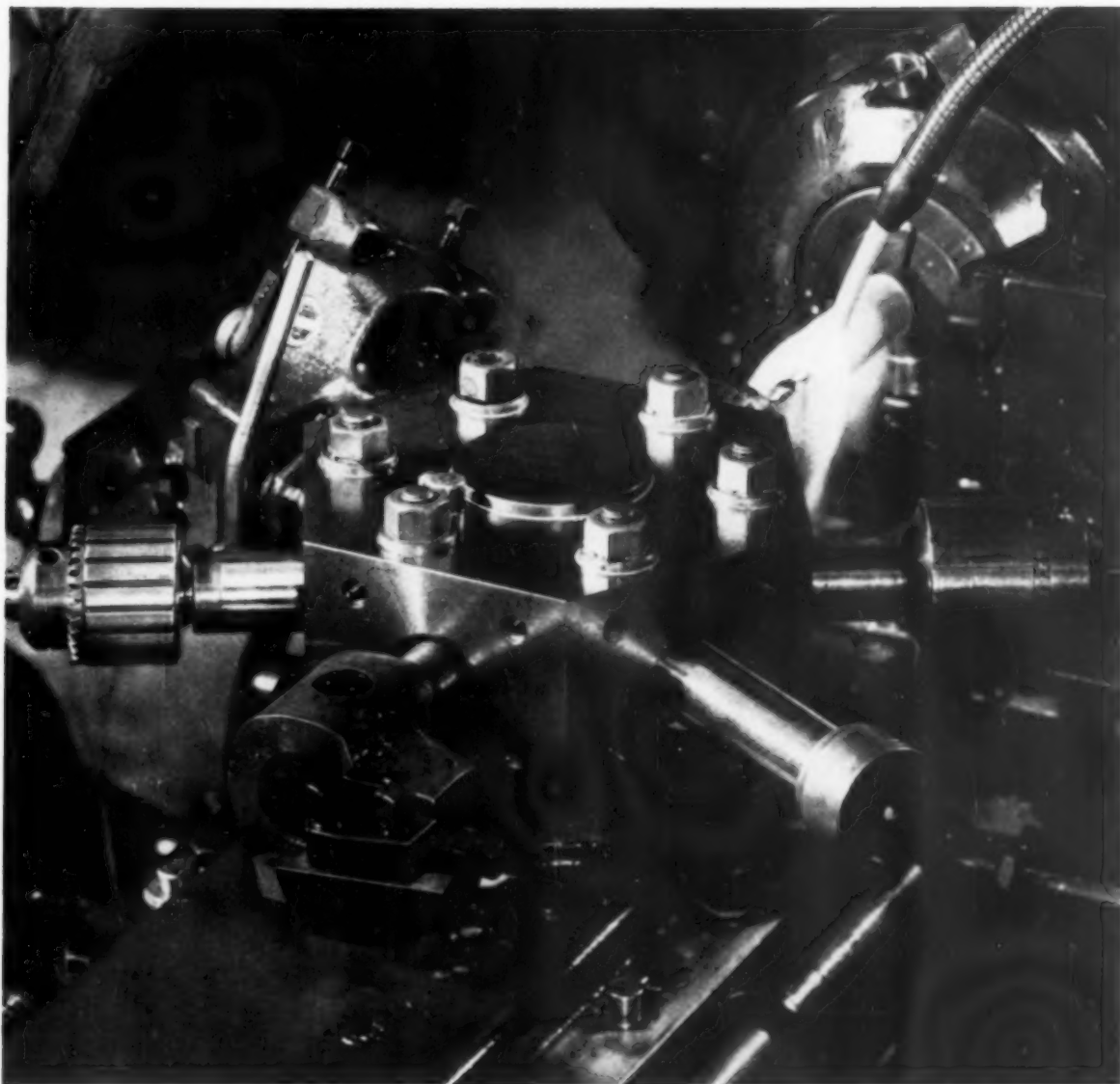
The loop was made of size 1½-in. screwed pipe fittings. The short leg is approximately 18-in. long; the long leg is approximately 30 in. long. The drain line is size ¾-in. and attached to the long leg of the loop. The reason for the long leg is to provide a surge chamber in the loop, when the air leak off meter is put into service to check the number of cubic feet per minute of air handled by the steam jet air ejector.



The 1½-in. tee was arranged to act as a sediment chamber for the loop. The 1½-in. plug was tapped for a ¾-in. plug, which is removed from time to time to purge out any sediment in the loop.

The ¾-in. sample line is a welded connection in the side of the 1½-in. tee. The copper tubing attached to the ¾-in. valve is arranged to collect sample of condensate as it passes thru the loop seal.

G. G. AVANT, Louis V. Sutton
Steam Plant, Carolina Power & Light Co., Wilmington, N. C.



The Drops that Up Production!

In cutting oils it's the quality *each drop* delivers, not the quantity used, that ups production. Backed by the largest combined petroleum research and testing facilities in the world Standard Oil Cutting Oils are designed and refined to help secure improved finish and closer tolerances while giving tools a cushion against shock and a protection against wear in cutting,

drilling, reaming and tapping operations.

The cooling effect of these oils is brought to a level that makes high speed work possible without machine damage. Rigid controls insure that every drop of Standard Oil Cutting Oils contains a full measure of these characteristics.

STANDARD OIL COMPANY (Kentucky)



Safer and Cheaper

THE Kyle-Taylor Pipe Company in Berwick, Louisiana operates a pipe storage and transfer yard. Approximately 41,000 tons of oil well casing and pipe are stored in three yards comprised of 15 acres with over two miles of roadway.

Casing and pipe ranging from 2" to 30" diameter is brought in by barge or gondola. A crane truck takes it from the hold of the barge or the gondola and places it on the dock.

Normally about 750 tons of pipe are handled daily with a maximum of 90 tons moved in one hour with one Traveloader side-loading fork truck. Three Traveloaders, manufactured by Baker Industrial Trucks, with one operator on each, pick up and transport this pipe into the storage area. Two men are used at loading end of operation for straightening up pipe and placing of stripping while three rack men are used at unloading end of operation.

While the monetary saving is of much importance, company officials feel that reduction in accident rate to 35% of previous factor is of greatest value. Total



handling cost has been reduced about 40% below cost in using oil field winch trucks.



Case 36 — Ga. Equipment Plant

Induction Hardening

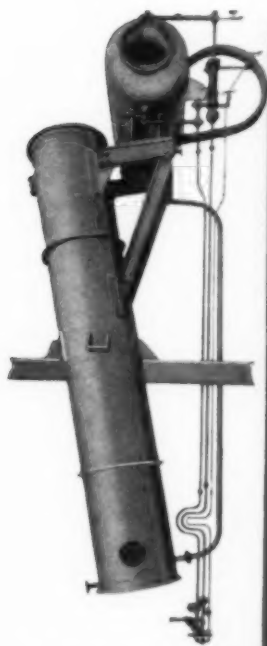
APPROXIMATELY 500 13-in. shock absorber shafts per hour are being hardened with each of three General Electric 40-kw induction heaters at the Monroe Auto Equipment Company plant at Hartwell, Georgia.

The hardening process is performed on an almost completely automated assembly line. The induction heating equipment was supplied by General Electric's Industrial Heating Department at Shelbyville, Indiana.

The new equipment requires far less floor space than equipment required for hardening by the former chrome plating process, according to the Monroe Company. In addition, the company said the old process required more manpower and was a batch-type operation.

To conserve floor space with the induction heater, the heater, heat exchanger, and voltage regulator are installed on a platform over the assembly line. A transmission line runs from this balcony to the line below connecting to an output transformer on the floor.

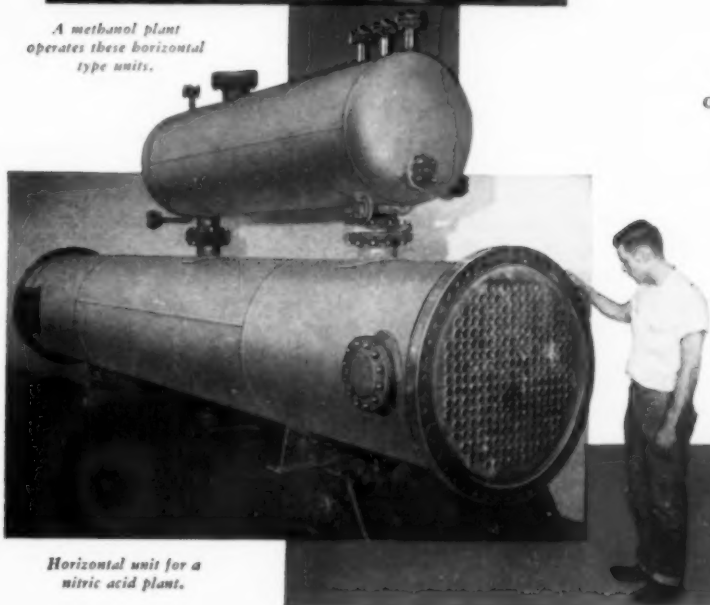
In manufacturing the equipment, parts are formed on a screw machine, then pass through a centerless grinder, induction heater fixture, water quench, two additional centerless grinders and finally through a lapping machine. The line requires only one operator to feed stock into the screw machine at one end and an operator to check the finished parts as they emerge from the lapping machine.



*Vertical type unit
for a hydrogen plant.*



*A methanol plant
operates these horizontal
type units.*



*Horizontal unit for a
nitric acid plant.*

**Get low cost steam
from process-heat**

with

CUSTOM BUILT

Vogt

WASTE HEAT

STEAM GENERATORS

**Now Serving Chemical and Petro-
Chemical Plants and Refineries**

Process heat is utilized by Vogt Waste Heat Steam Generators to efficiently provide steam while cooling the process stream.

The four types illustrated are adaptable to many special problems of process heat exchange but are only a few of the many designs we employ to meet specific application requirements. All units are custom built from materials suitable for the temperatures and corrosive conditions involved.

Units in successful operation prove that our engineers are technically qualified to work with you in the solution of your problems. There's no obligation.

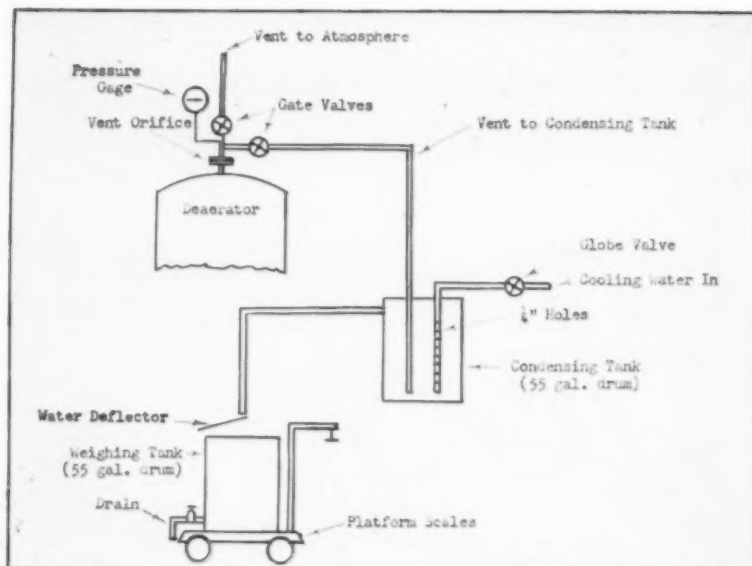
Address Dept. 24A-XS.

HENRY VOGT MACHINE CO.
Louisville, Kentucky

SALES OFFICES:

New York, Chicago, Cleveland, Dallas,
Camden, N. J., St. Louis,
Charleston, W. Va., Cincinnati

OTHER VOGT PRODUCTS:
DROP FORGED STEEL VALVES, FITTINGS,
FLANGES AND UNIONS, PETROLEUM
REFINERY AND CHEMICAL PLANT EQUIPMENT,
HEAT EXCHANGERS, ICE MAKING &
REFRIGERATING EQUIPMENT



Case 37 - Florida Utility

Deaerator Vent Measurement

IMPROPER separation of water from the vent steam and non-condensable gases being vented from deaerators without vent condensers can be costly if not corrected.

The flow through the orifice has a great deal of effect on the amount of water the vent stream carries over with it and the determination of the noncondensable gases, or their effect on the total pressure drop through the orifice or vent valve, makes it practically impossible to calculate the quantity of moisture flow through the vent system.

Recently we had reasons to believe that the venting system on our deaerators was picking up too much water. So, we were confronted with the problem of getting an accurate measurement of the flow without going to a great deal of expense.

The accompanying sketch shows the apparatus used.

The pipe leading from the atmospheric side of the vent orifice to the condensing tank should be sized large enough so that no increased pressure drop occurs when

the vent stream is flowing to the condensing tank. A 3 to 4 in. pipe should be used to drain the condensing tank to the weighing tank.

The cooling water supply should be introduced into the condensing tank to give necessary mixing effect between the steam and the water. A two inch pipe header with $\frac{1}{4}$ " holes drilled along the length of the pipe section, starting about 9" below the constant level in the condensing tank, will do a good job.

The cooling water supply will have to be from a constant pressure source. In our case the fire pump was used. A means of diverting the flow from the condensing tank into or away from the weighing tank is needed. A piece of light sheet metal bent into a trough will suffice.

With the piping arranged as described the cooling water supply can be started at a rate that will allow the overflow to take away what is coming in. The deaerator vent can then be directed into the condensing tank and the cooling water supply throttled down as low as possible and still condense

the incoming steam.

With this steady flow condition established a rate of flow from the condensing tank can be taken by use of a stop watch and weighing tank on the platform scales.

After three or four checks have been made, the vent from the deaerator should be returned to the atmosphere and the rate of flow of the cooling water used to condense the steam established in the same manner. The difference between the two rates is the pounds of flow from the deaerator.

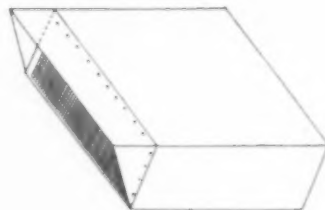
With a little care and practice very accurate results can be established.

By D. W. HOLT, Supervisor Plant Efficiency, Scholz Steam Plant, Gulf Power Co.

Case 38 - Texas

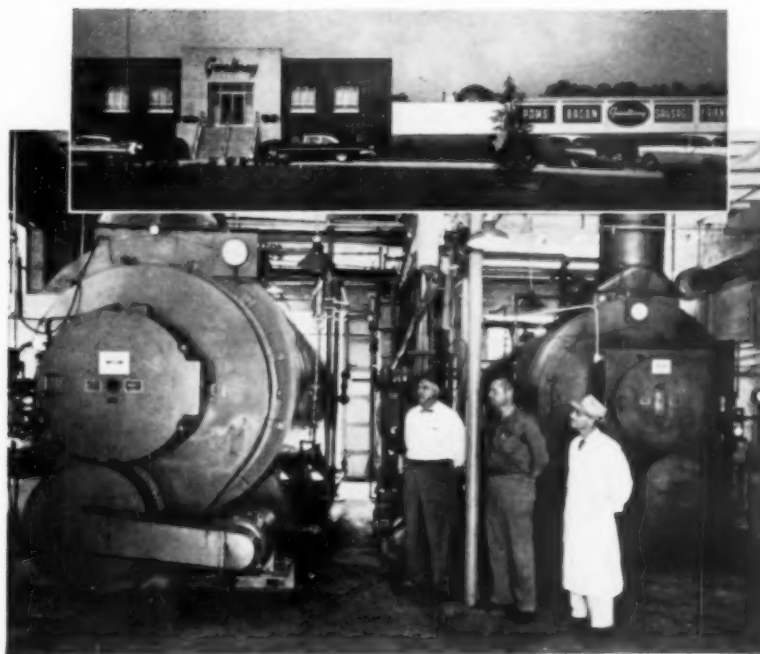
Conditioner Performance

THE CAPACITY and efficiency of window unit air conditioners is reduced whenever the condenser is directly in the sun, especially on units on the south and west exposures. This can be simply remedied by providing a metal shield as shown.



The shield can be sheet metal screwed to the unit casing, using a rubber or vinyl tape gasket to minimize corrosion where dissimilar metals are involved. The shield should be light in color for maximum reflection. Some units come with a metal back formed in such a way that the coil is shielded; in such case the external shield is unnecessary. Caution: Do Not Drill Into The Coil!

Such a shield screens the condenser from the radiant heat of direct sun rays and helps performance appreciably.



Continental Boilers at Gwaltney, Inc., Smithfield, Va. Left to right, C. Fred Bailey, Continental Boiler Representative, B. W. Yeoman, Chief Engineer, and J. D. Gwaltney, Vice-President.

STEAM COST CUT savings up to \$7,000 per year

The world's largest processor of genuine Smithfield Hams cut steam costs \$7,000 per year with two Continental Boilers — a 400 H.P. Continental installed in 1953, and a 600 H.P. unit installed more recently.

Although firing Bunker "C" fuel oil, the cleanliness of operation of these units has made a most favorable impression on the owners and visiting affiliates.

J. D. Gwaltney, Vice-President, Gwaltney, Inc., Smithfield, Va., says: "Our experience and figures show that we are saving \$7,000 yearly . . . our cost per pound of steam has decreased to effect this saving, to say nothing of the cleanliness of operation which is an important consideration in a food processing plant."

Continental Boiler users benefit by many outstanding features . . . **80% EFFICIENCY** — guaranteed by the manufacturer. **REDUCED MAINTENANCE** — a result of simplified construction and maximum accessibility. **ONE-SOURCE RESPONSIBILITY** — a positive assurance of satisfactory performance.

Compare the distinctive features of Continental 2-pass design with "extra-pass" boilers by securing new publication BE-100.

BOILER ENGINEERING & SUPPLY COMPANY, INC.
Phoenixville, Penna.

Continental

AUTOMATIC BOILER

A HALF CENTURY OF BOILER MANUFACTURING EXPERIENCE

Let your
Continental
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Help You



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Englewood—Champion Specialty Co.

CONNECTICUT

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DISTRICT OF COLUMBIA

Washington—Charles C. Plummer

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Jacksonville—H. L. McMurry & Co.
Miami—H. L. McMurry & Co.
Orlando—H. L. McMurry & Co.
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GEORGIA

Atlanta—Mechanical Associates
Augusta—Tarte Boiler Repair Co.

ILLINOIS

Chicago—Automatic Steam Sales Co.

INDIANA

Indianapolis—C. C. Schuetz, Inc.
New Albany—Falls Cities Boiler & Machine

IOWA

Waterloo—J. A. Neymeyer Co.

LOUISIANA

New Orleans—Cressy Sales Company

MARYLAND

Baltimore—Heating Services, Inc.
Hagerstown—Hagerstown Equipment Co.
Salisbury—R. D. Grier & Sons Co.

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Dorchester—Lewis National Corp.

MICHIGAN

Dearborn—Kramer & Associates, Inc.

MINNESOTA

Minneapolis—Oil Burner Service Co., Inc.
St. Paul—Lincoln Equipment, Inc.

MISSISSIPPI

Jackson—Climate Engineers, Inc.

MISSOURI

St. Louis—Continental Boiler & Sheet Iron Works

NEBRASKA

Omaha—Midwest Utility Service Co., Inc.

NEW YORK

Binghamton—Ellis Morse Company
Buffalo—W. J. Clark Equipment Co.
Glensville—Olin T. Caldwell & Co.
Hudson Falls—Boiler Equipment Co.
New York—Thermal International, Inc.
Rochester—Ernest J. Roakey
Syracuse—U & S Supply Corp.

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Greensboro—M. G. Newell Co., Inc.

OHIO

Cincinnati—Kenneth B. Little Co.
Cleveland—P. M. Equipment Co.
Columbus—Don Delp Co.
Toledo—Air Conditioning Distributors, Inc.

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Oklahoma City—Macha-Line Co.

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Phoenixville—Basco Sales, Merrill A. Squier
Pittsburgh—John C. Gregg Company

RHODE ISLAND

Providence—Weatherall Engineers, Inc.

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Nashville—Boiler Supply Co.

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UTAH

Salt Lake City—Power Engineering Company

VIRGINIA

Lynchburg—Industrial Heating Co.
Suffolk—C. Fred Bailey

WISCONSIN

Milwaukee—Industrial Steam, Inc.

Coated Nylon Covers for Kansas Pumps

FOUR YEARS' experience with neoprene coated nylon tarpaulins as protective coverings for engine and pump house units

on oil well drilling rigs has demonstrated the long-term advantage of the versatile material, according to Peel Brothers, Inc., of Hoisington, Kan.

"These tarps are almost as good as the day we bought them," says Wendell C. Peel, president. Mr. Peel and other officials have found that engines protected by coated nylon from burning sun and rock-bottom winter temperatures oper-

ate with much higher efficiency and lower operating costs.

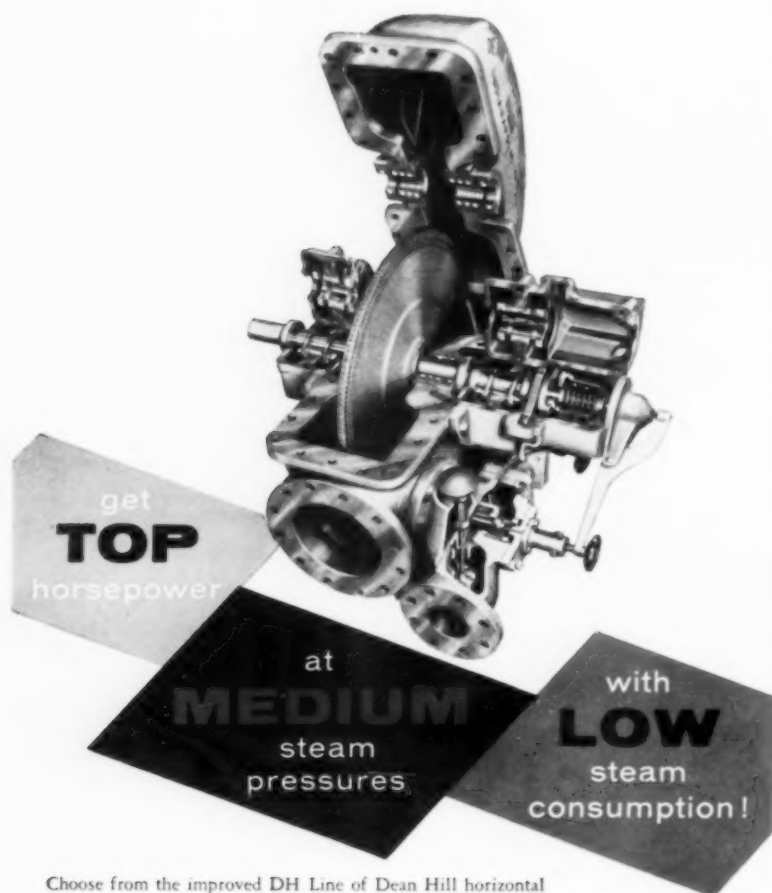
"We had used metal shelters or regular tarps for years," reports Mr. Peel, "but after purchasing a number of the coated nylon covers on a trial basis four years ago, we're very satisfied with their performance. And, in this business, you can't afford shut-downs."

The firm has one installation completely protected with nylon side and top covers. In addition, several units have coated nylon top covers that replaced worn-out conventional tarps.

One of the principal advantages of coated nylon cited by Mr. Peel is light weight. "The average time per well rig installation in the Kansas area, for example, is about 11 days," he says. "Where short installation periods and relatively short moves are involved, light weight means less bulk and less time to put the shelters in place."

Mr. Peel reports that the nylon covers are aluminum coated on both sides, providing a dual purpose: in the summer, the outer coating reflects heat and keeps protected area relatively cool; during winter, the engine heat is conserved, keeping personnel more comfortable.

Coated nylon is easy to clean, doesn't become dotted with holes caused by flying sparks from machinery, and is resistant to tearing, rot, and mildew.



Choose from the improved DH Line of Dean Hill horizontal turbines which give you up to twice the power of earlier models while maintaining the same economy of operation.

The major change contributing to this tremendous power increase is the addition of steam nozzles to all models. On types now built with two nozzles—DH-10, DH-15, DH-20, DH-25—this change has meant a 100% increase in the maximum horsepower of each unit! On new three-nozzle models—DH-30, DH-35, DH-40, DH-45—the rated increase in maximum horsepower is 50%!

Why not get the complete power picture of Dean Hill's improved DH Line of horizontal turbines? Write today for Turbine Catalog, No. 500.

DEAN



HILL PUMP COMPANY

Pump and Turbine Engineers Since 1893
Indianapolis 7, Indiana

OFFICES IN PRINCIPAL CITIES

Case 40 — South Carolina

In-Plant Survey Shows Up Troubles

LONG TERM success of any business depends upon satisfied customers. Equally as important is the ability of the plant to produce a quality product at the lowest possible cost for a maximum profit. No department is excused from cooperating and being a member of an integrated production team. Departments such as maintenance, purchasing, production control, fabricating and accounting, in many ways contribute

ROBVON

BACKING RINGS

**APPROVED FOR
WELDED PIPE,
VALVES, AND
FITTING JOINTS**



- ✓ Nub diameter automatically sets welding for root pass
- ✓ Forms perfect welded joint eliminating slag and icicles
- ✓ Allows complete penetration and fusion
- ✓ Eliminates the necessity of tack welding
- ✓ Radiographs a perfect certified weld

Available in carbon steel, wrought iron, chrome alloys, stainless steel, aluminum and copper

TYPE CCC

Designed for quick easy alignment of pipe where the variation in inside diameters is relatively great. Chamfered NUBS allow close tolerance fit-up and CLEAN STRIKE OFF. The ROBVON NUB automatically sets root gap. ROBVON rings are beveled to assure non-restricted fluid flow.

TYPE CC

Designed to allow quick easy alignment of pipe where the inside diameters are slightly out of round. The welder has the choice of "STRIKING OFF" the NUBS or leaving them intact to be melted into the weld mass of the first root pass.

TYPE C

Designed for precise close tolerance fit-up. Type "C" NUBS automatically set root gap. The NUBS melt with the metal to give complete penetration and fusion.

**Robvon also manufactures machined rings to customer's specifications
All fabricated solid machined rings x-rayed. Write for full information**

ROBVON
BACKING RING COMPANY

675 GARDEN STREET

ELIZABETH, NEW JERSEY



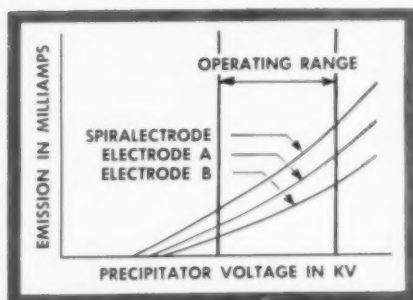
1500 miles of Spiralelectrodes in Precipitator Service!

That's real proof of superior performance.

Over 1500 miles of these emitting electrodes have been installed in "SF" electric precipitators . . . delivering 50 to 100% more electron emission than conventional types of electrodes.

There are sound reasons why Buell *Spiralelectrodes* are providing superior emitting efficiency in actual dust collecting applications.

- *Spiralelectrodes* are "emission engineered" — pitch and diameter are custom designed for each application . . . of critical importance with high resistivity dust.
- *Spiralelectrodes* are precision made from stainless steel — of uniform quality, corrosion-resistant.
- *Spiralelectrodes* minimize efficiency-loss of dust build-up — no horizontal surface to collect dust, positive rapping cleans electrodes.
- *Spiralelectrodes* maintain predetermined tension — (no weights required) . . . dampen effect of vibration caused by electrical pulsation, thereby minimizing electrode breakage.
- *Spiralelectrodes'* controlled area emission stops sparking effect of "point emission."



Above chart illustrates the superior emission of the *Spiralelectrode*: its corona voltage is lower and its emission is higher than other types of emitting electrodes over the entire operating range of industrial precipitator voltage.

The superior operating characteristics of *Spiralelectrodes* contribute to continued high efficiency of Buell "SF" Precipitators. Detailed information of this and other exclusive features are described in a booklet, "Buell 'SF' Electric Precipitators." Send for your copy: write Dept. 80-J, Buell Engineering Company, Inc., 123 William Street, New York 38, New York.

buell®

Experts at delivering Extra Efficiency in
DUST COLLECTION SYSTEMS

to efficiency of the production division.

Production was increased 18% in our plant because of a survey made by our production planning department. A formula for successful production planning has evolved that can be used in principal by any manufacturing plant.

The survey revealed many factors contributing to less inefficient production:

1. **ABSENTEEISM** — Corrected by establishing rules for disciplinary action for unexcusable absences and reorganizing working force to make up for absentees.

2. **ACCIDENTS** — If a man is taken out of production the same system of reorganization for absenteeism is followed.

3. **BREAKDOWN** — An immediate evaluation is made as to time it would take to repair. If possible, temporary repairs are made until the machine is available to be worked on. A record of downtime is being established to be used in the future for allowances in adjusting production. Preventive maintenance records are maintained and indicate life expectancy of machine parts.

4. **ERRORS** — Improved scheduling to priority and delivery commitments. Fabricating errors reduced by constant checking by supervisors and quality control patrol.

5. **MATERIALS** — Inventories are kept accurately to prevent shortage and stoppage of production. Purchasing works closely with production control.

6. **RUSH ORDERS** — Procedures are preplanned to take care of changes. A department is always ready for a changeover.

7. **BACKLOGS** — Component parts are maintained so if a machine or department fails to get production the next department in line will not be shut, or slowed down.

8. **MORALE** — The employees are kept well informed of the general situation on orders and company policy.

9. **COMMUNICATION** — An intercommunication system was installed in the plant for a more efficient manner of communication with all department supervisors.

RELIABLE VENTILATION IN A PACKAGE

"Buffalo" Belted Vent Sets

Quiet, ruggedly constructed and compact, "Buffalo" Belted Vent Sets are equally adaptable to indoor or outdoor installations. Double-curved blades prevent overloading. Inlet vane design reduces turbulence and air noise. Insures quiet, stable fan operation, even under unfavorable

inlet conditions. Available with all-weather drive cover for roof or other outdoor installations. Capacities range from 500 to 20,000 cfm. Adjustable pitch motor sheaves permit variable capacity.

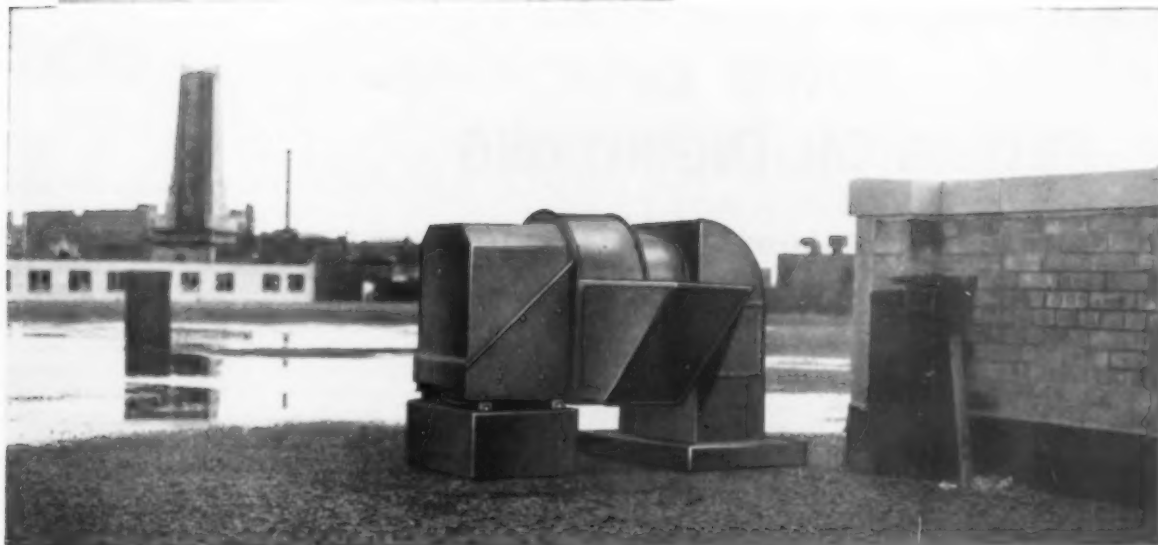
For full information, write for Bulletin 3720-A.



SPECIAL FEATURES AVAILABLE

All-Weather Cover and Rain Shield. Drain Connection in bottom fan housing. Access Door in scroll. Inlet and Outlet Screens. Non-sparking Aluminum Wheels. Enclosed or Explosion-Proof Motors. Ball Bearing Motors. Anti-Vibration Pads. Stainless Steel or Aluminum Construction for Units having all parts in contact with gas or fumes. Belt Guard. Gravity Type, Hand-Operated or Motor-Operated Outlet Shutters. Special Protective Coatings on Inside Housing and Wheel.

All "Buffalo" products feature the famous "Q" Factor—the built-in Quality that assures trouble-free satisfaction and long life.



VENTILATING
AIR CLEANING
AIR TEMPERING
INDUCED DRAFT

BUFFALO FORGE COMPANY

EXHAUSTING
FORCED DRAFT
COOLING
HEATING
PRESSURE
BLOWING

BUFFALO, N. Y.

Buffalo Pumps Division, Buffalo, N. Y.

Canadian Blower & Forge Company, Ltd., Kitchener, Ont.



NEW IDEAS? I SURE
GET PLENTY AT THE POWER
SHOW. NO DOUBT ABOUT IT.
BILL, I ALWAYS GET A WEALTH
OF ENGINEERING INFORMATION
BY TALKING TO THE EXHIBITORS'
TECHNICAL PERSONNEL. AND
THIS IS THE PLACE TO SEE
AND COMPARE NEW, COST-
SAVING EQUIPMENT.

YES, ED. WE'RE
ESPECIALLY CONCERNED RIGHT
NOW WITH LOWERING
OUR PRODUCTION COSTS.
AND SOME OF THE IDEAS
I'VE PICKED UP HERE ARE GOING
TO HELP DO IT.



YOU, TOO, CAN SECURE VALUABLE NEW IDEAS

at the

23rd National Exposition of POWER & MECHANICAL ENGINEERING

Auspices of ASME

New York Coliseum • Dec. 1-5, 1958

See first-hand the new, cost-saving products of some 300 leading manufacturers—talk to their technical representatives and get the answers to your problems. Be informed on the newest developments, methods and products.

Save time, avoid standing in line, by filling out the coupon below and registering now, by mail!

ASME ANNUAL MEETING

with some 110 technical sessions will be held at the Statler-Hilton and Sheraton-McAlpin Hotels during the same week.

**23rd National Exposition of
Power & Mechanical Engineering
480 Lexington Avenue, New York 17, N. Y.**

Yes, please, send me admission badge at no charge.

Name

Title

Company

Address

Type of Products
or Business

The corrective measures taken and the altering of our Production Control System evolved thusly. The need for improvement in production control was evident in the kinds of problems at hand. All production control systems would have these basic considerations.

1. There must be a system
2. There must be an adequate inventory
3. There must be a schedule made and maintained according to priority and delivery commitments
4. There must be specific duties, responsibilities and a given authority to the person responsible
5. There must be regularly scheduled production control meetings
6. Most of all there must be a sincere desire on the part of all concerned to improve.

THOMAS T. SCALA

*Lock Joint Pipe Company
Columbia, South Carolina*

Case 41 - Florida

Condensate Handling

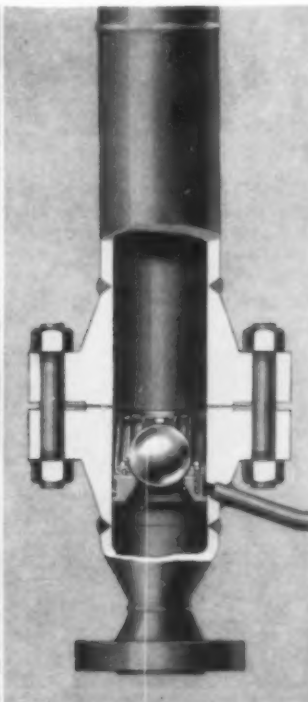
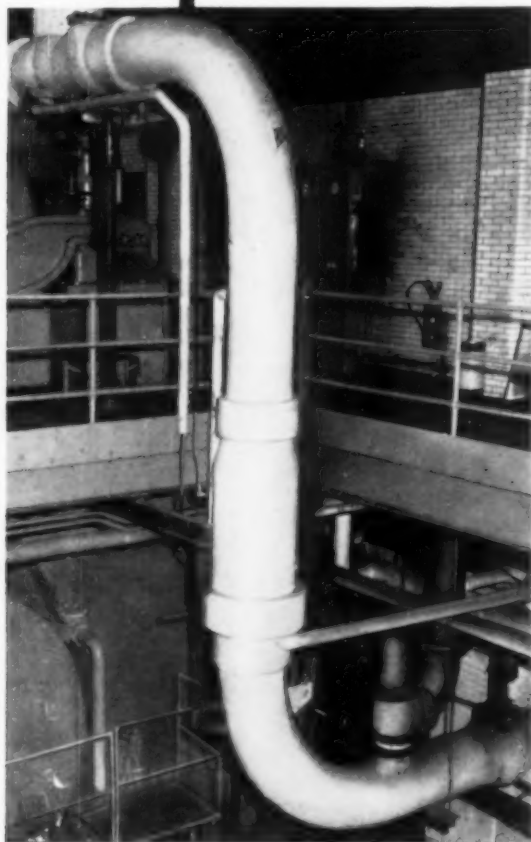
IN THE phosphate regions of

Florida, many of the mines and fertilizer plants make triple superphosphate which requires thousands of tons of sulphuric acid daily. In the acid production, sulphur melters are used. These are immense underground concrete tanks lined with steam coils. The sulphur is dumped in these where it is melted. From here, it is pumped to the burners under waste heat boilers. Because of this construction, with traps above the coils as they must be, much trouble is experienced in getting proper drainage because of difficult air disposal.

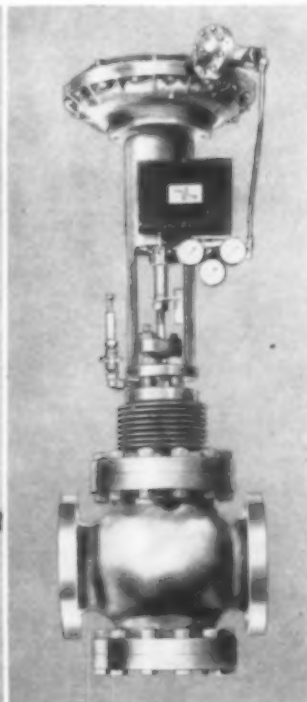
Being familiar with these difficulties, H. K. Wilson of St. Petersburg, Fla., state distributor of the Coe Drainator traps initiated a few tests. This line of traps operate through the thermodynamic properties of the water, they have no moving parts and give constant indication of their operation thus removing all guesswork which is



How Copes-Vulcan control systems boost power plant efficiency



Steel ball controls orifice opening. Incoming steam lifts the ball in an amount determined by the weight of the ball and the amount of steam flow. Pressure drop of about 3 psig is held constant at all rates of flow.



Copes-Vulcan valve . . . for regulating desuperheater cooling water. Noted for accuracy and dependability, Type CV-D diaphragm-operated valve is available in sizes to 12-inch. Write for Bulletin 1027.

New Copes-Vulcan Desuperheater handles the tough temperature control jobs

Using a unique design principle Copes-Vulcan's newly developed Variable-Orifice Desuperheater* provides superior temperature control demanded on the most critical job. Installed in a steam header supplying a 12,500-kw turbine-generator, this desuperheater holds temperatures within a plus-or-minus 3F limit—even though it is located just 20 feet upstream of the turbine throttle.

With only one outside connection and only one moving part, the Variable-Orifice Desuperheater simplifies maintenance. Skillful design eliminates the need for long runs of piping, atomizing steam, spray nozzle and glands.

The Variable-Orifice Desuperheater is one of several

types—each engineered to meet particular operating requirements. Write for Bulletin 1037.

Single source . . . custom design . . . skilled service

Desuperheaters are a part of Copes-Vulcan's complete line of control systems for superheat and reheat temperatures, feed water, combustion and pressure reducing operations.

Available in separate units or integrated into a single package, these control systems are custom-designed to meet individual specifications, and are serviced periodically by experienced Copes-Vulcan field engineers. For a survey of the line, write for Bulletin 1022-B.

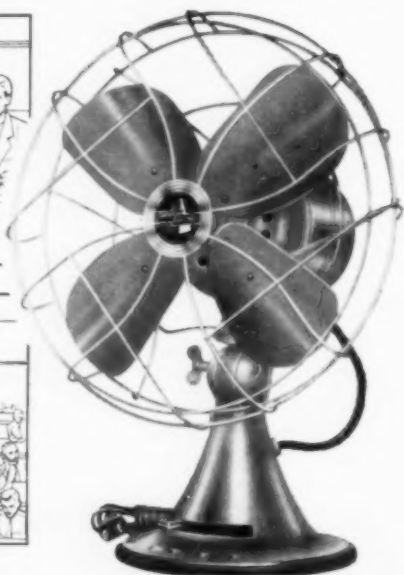
*Patent applied for.

Copes-Vulcan Division
BLAW-KNOX COMPANY
Erie 4, Pennsylvania

Replace dead air with

Active air

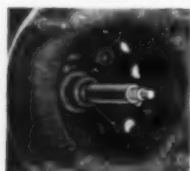
Good for everybody



Emerson-Electric—your best fan buy!

Dead, stagnant air—even in air-conditioned areas—is uncomfortable. ACTIVE AIR is refreshing, stimulating. That's why Emerson Electric ACTIVE AIR oscillators are so widely used for desk and wall mounting—by keeping air in continuous circulation, they add to everyone's energy and well-being.

Emerson-Electric fans are your best buy. Many have been in operation for 25 to 40 years! Today, Emerson-Electric ACTIVE AIR fans give you better service, more convenience. Five-year Factory-to-User Guarantee.



Stationary hollow-steel shaft is case-hardened and rigidly anchored to the motor frame. Quieter, longer fan life.

Forced-feed lubrication—spiral oil grooves and conveyor return—continuously feed oil to bearing surfaces. Longer bearing life.



Finger-tip oscillation adjustment—simply "dial" any sweep, from 90° to stationary. Exclusive, convenient.

See your distributor for more information or write for catalog No. F-228.

THE EMERSON ELECTRIC MFG. CO.,
ST. LOUIS 21, MISSOURI



Emerson-Electric of St. Louis • Since 1890

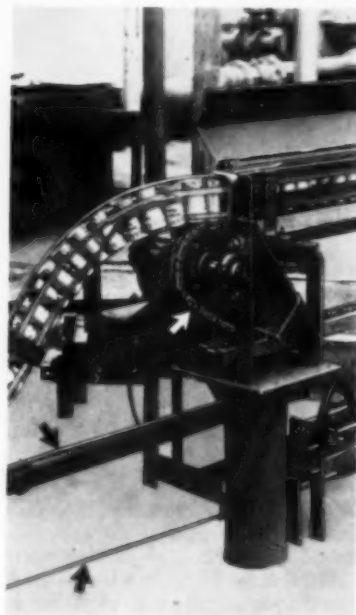
one of the stumbling blocks of trap operation.

Because of their thermodynamic control, they give a continuous but variable discharge, and because of this, the air is kept intrained in the water giving a more complete evacuation. At the same time they eliminate after flash, thereby saving 10 to 20% thermal loss.

Case 42 — Florida

Handling Damage Stopped

CANS of concentrate were being damaged while enroute to freezer storage. A thorough study of this problem disclosed that the damage was caused by cable burns on the bottom seams and jamming as cans moved along the conveyor system.



To eliminate this problem, we re-designed the handling system for our full can lines, installing Diamond Chain Company's double pitch conveyor chains. Since that time, we have lost very few production man-hours because of jamming, and bottom seam damage has been reduced to a negligible amount.

J. F. KELLER, Superintendent,
Plymouth, Florida, Plant, Minute Maid Corporation.

Put plant traffic on a safe road with strong, easy-to-erect Armco Guardrail



Armco FLEX-BEAM Guardrail installed in a parking lot at Bendix Products Division, Mishawaka Plant, Mishawaka, Indiana. Note stall markings on the rail. No danger of wearing off and they are easy to see, even with snow on the ground.

Protects Machines and Equipment; Guides Traffic, Promotes Safety

You can use highway-tested Armco FLEX-BEAM® Guardrail to add safety and convenience to plant traffic. The cost is low.

FLEX-BEAM is a beam-type, deep corrugated steel rail (10 or 12 gage) that resists severe impact, yet flexes slightly to cushion the shock of a collision. You can attach it easily to almost any kind of post. Eight bolts join 12-foot sections. Maintenance is no problem. An occasional painting keeps FLEX-BEAM highly visible. The corrugated surface reflects light from any direction.

Put Armco FLEX-BEAM Guardrail to work inside and outside your plant at key points like plant entrances, parking lots, aisleways, structural supports for your buildings, and around valuable machinery and equipment. Write us for complete information.



Wandering trucks cannot damage this important production equipment. FLEX-BEAM provides complete protection. Guardrail also makes definite separation of work area and busy traffic aisle.

ARMCO DRAINAGE & METAL PRODUCTS, INC.

DIXIE DIVISION

P. O. Box 1343 • Atlanta, Georgia

SOUTHWESTERN DIVISION

C & I Life Bldg. • Houston, Texas

Other Offices in Principal Cities

Armco FLEX-BEAM Guardrail

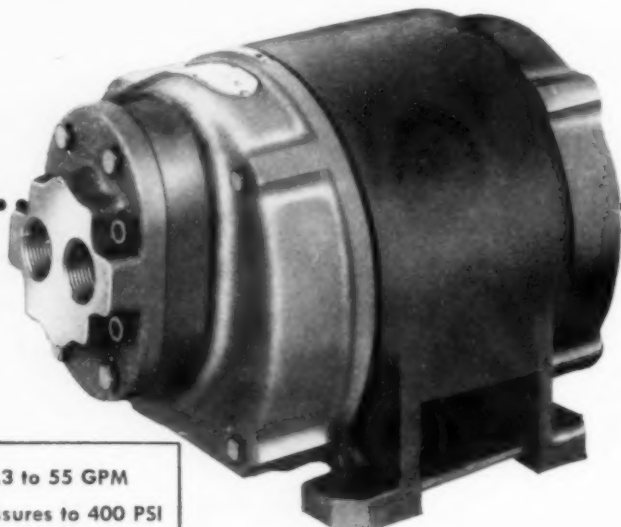


They're Here!

NEW ADDITIONS TO THE

ROPER T SERIES

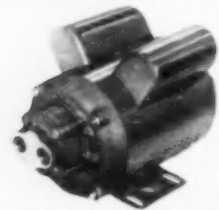
COMPACT, INTEGRAL PUMP AND MOTOR UNITS
For Hydraulic, Pressure Feed, Transfer Work



.3 to 55 GPM
Pressures to 400 PSI

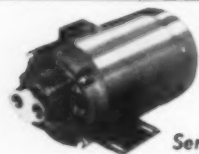
NOW...A CHOICE OF 192 MODELS

Roper has expanded its line of Series T rotary pump units to take care of a wider range of uses pumping clean liquids. These "all-in-one" units, with pump serving as the end bell of the motor, are easily installed and have minimum space requirements . . . no coupling is required . . . each unit is approximately same size as standard NEMA motor of HP required for driving. For your specific application consult the Roper representative in your vicinity.



- **COMPLETE, COMPACT UNITS**
- **LOW FIRST COST**
- **MOUNT IN ANY POSITION**
- **LONG LIFE SERVICE**
- **LIGHT WEIGHT**

Roper Series T units are available in short, low and larger units with open drip proof or totally enclosed motors, single or three phase as required. Typical applications include: hydraulic door openers, work table movement, hospital beds, dental chairs, general transfer, as well as metering jobs on a wide variety of applications.



Send for Bulletin 31

ROPER HYDRAULICS, INC.
440 Blackhawk Park Avenue
Rockford, Illinois

ROPER
ROTARY PUMPS

Case 43 — Tex. Steel Mill

Radiation Masked

A STEEL MILL in Texas was having trouble in their pipe mill. When the pipe was welded, the seam had to be ground down to a smooth surface. This left a bright metal surface running the length of the pipe.

They had been using powdered coke in a water solution to spray on this pipe just before it went into the annealing oven to mask this bright line and give more even heat distribution to stop the warping of the pipe caused by the uneven absorption of heat, due to the bright line reflecting the heat. The coke didn't adhere properly and they were still getting some warping.

This steel company asked L. Sonneborn Sons Inc. what they might have that would not be too expensive and still would give the desired adhesion and dulling of the bright seam. A solution of Carbo-Jet, a dispersed carbon black, was suggested.

The steel company found that a solution using only 1 part Carbo-Jet to 20 parts water gave a solution with sufficient masking power to accomplish the desired result and stop the warping of pipe going through the annealing ovens.

SPI . . . 55th Year

REACHES industrial plants (manufacturing, process, utility and large service) in the South & Southwest.

SERVES plant managers, superintendents, engineering department heads and plant operating staffs.

PROVIDES information to solve design, installation, operating and plant maintenance problems.

BULLETIN!

POWELL introduces new member in world's largest family of valves

Powell engineered "Full Flow" bronze valves are now available in a full line: the brand-new 150-pound screwed end Globe Valve, in addition to the well-known 200-300 pound Screwed and the 150-300 pound Flanged Globe and Angle Valves.

Although designed by Powell to assure maximum flow with minimum pressure

drop and internal turbulence, these valves can be throttled to permit only the minutest amount of fluid to pass through. And, if desired, they can be supplied with Indicator Collar, Arm and V-port Disc for quickly determining flow and holding it constant.

Compare these advantages of Powell Full Flow valves:

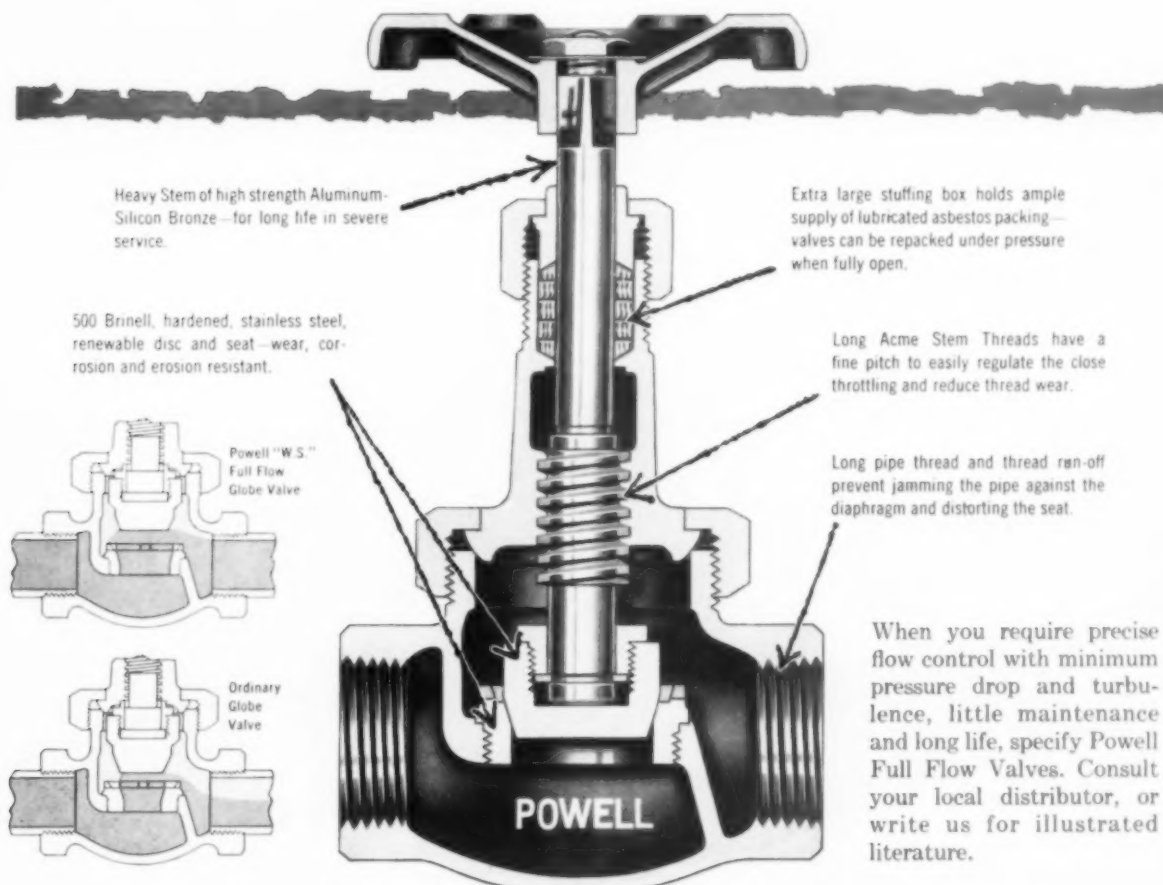
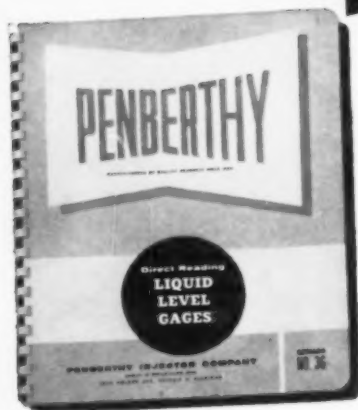


Fig. 2600 (Sectional)—150-pound "W.S." Full Flow Globe Valve, Screwed Ends

THE WM. POWELL COMPANY • Dependable Valves Since 1846 • Cincinnati 22, Ohio

GET THIS HANDY GUIDE TO BETTER VALVES AND GAGES



Shows complete line of Penberthy valves and liquid-level gages for power, petroleum, and process industries. Includes technical data, parts, price lists, and accessories such as:

HEATING AND COOLING GAGES... for accurate readings where liquids must be cooled or heated to obtain exact measurement.

INSTRUMENT VALVE... permits gage repair or replacement without shutdowns. Back-seating stem permits repacking under pressure.

FROST PREVENTIVE GAGE... eliminates frost build-up... assures dependable visibility. For industries where frosting interferes with accurate readings.

ILLUMINATORS... plastic wedge distributes bright, even light along entire column. Non-glaring... dustproof for perfect illumination.

WELDING PAD GAGES... where process conditions require observation windows in integral part of vessel.

PENBERTHY

Dept. 5P

Penberthy Manufacturing Company
Division of Buffalo-Eclipse Corporation

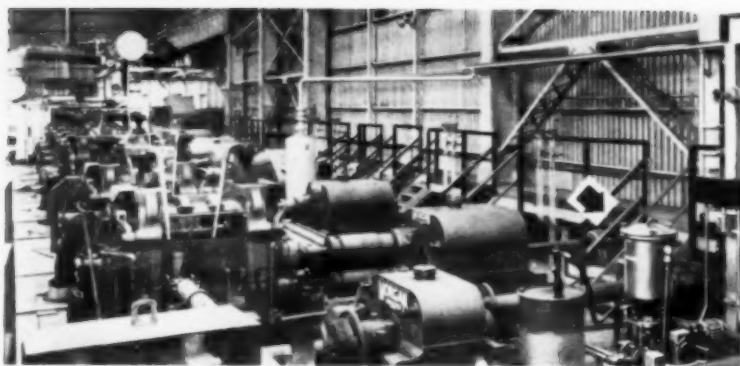
1242 Holden Ave., Detroit 2, Mich.

Please send FREE copy of Catalog #36.

NAME _____ TITLE _____

ADDRESS _____

COMPANY _____



Case 44 - Ga. Steel Mill

Controlled Lubrication

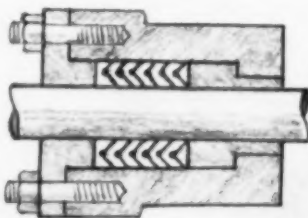
A TOTAL of 24 Farval Centralized Lubricating Systems serve 1,133 important bearings at Atlantic Steel Company's bar and rod mill. Better housekeeping conditions are promoted because messy, hand methods of greasing and oiling are virtually eliminated.

The lubricant is stored in central pumping station reservoirs from where it is pumped automatically through hydraulically-operated measuring valves

serving the bearings. The hydraulically-operated measuring valves are individually adjustable for quantity and inject only the correct amount of lubricant to the bearings thereby eliminating waste on the floor.

Huge savings, in addition to better housekeeping, are accruing due to economy in lubricant consumption, less labor, and increased bearing life. Proper lubrication also increases production by allowing higher machine speeds and eliminating lubrication downtime.

Shown in Farval station No. 3 serving 240 bearings on 15 horizontal mills, edging mill, furnace switch and pullout.



Case 45 - Synthetic Fibers

Teflon V-Rings on Rotating Shafts

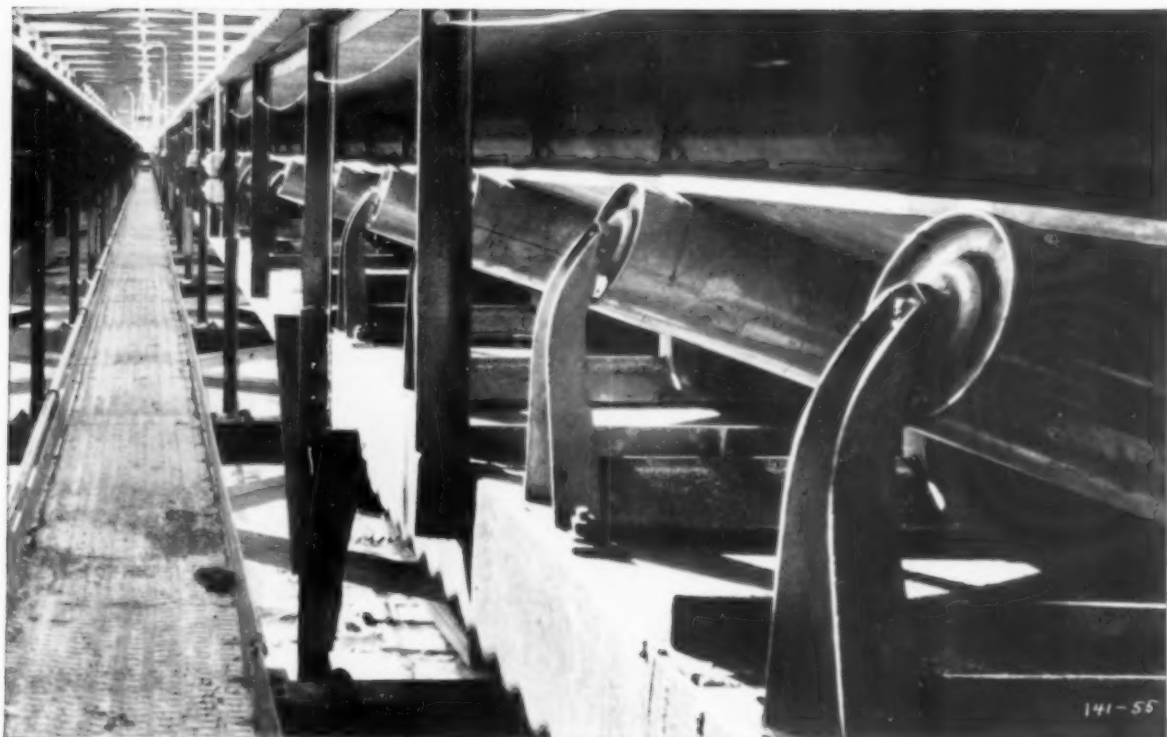
V-RING PACKINGS of various materials have long been used for hydraulic-press rams and similar service. More recently the use of Teflon V-ring packing has become standard practice to reduce

stem wear and friction loss on control valves. They have not, however, been recommended for use on high speed rotary shafts.

Among others, a large Carolina manufacturer of synthetic fibres has found practical advantages by using Teflon V-ring packing sets of special composition, similar to above illustration.

Installed on slow-speed rotary shafts of 12-in. and smaller, they have reduced wear on shafts and given long life, holding both pressure or vacuum, where box temperatures are under 500 F. Practically no chemicals in commercial use will corrode or adhere to Teflon.

V-rings are supplied by Chemical Power & Products in either pure Teflon, or in Teflon filled with zirconium, or glass fibre, or glass-fibre with molybdenum bisulphide, as best suited to operating conditions.



Automate your materials handling...
with Jeffrey equipment

Efficient, dependable Jeffrey conveying equipment is a valuable antidote for rising costs in processes where bulk materials must be moved. PERMASEAL® idlers on these conveyors mean years of usage without greasing—contribute to lower operating and maintenance costs.

Jeffrey products are available through distributors in principal cities. You'll find these men *production-conscious*, ready and willing to advise on your conveying needs. For this help, see them or write The Jeffrey Manufacturing Company, 398 North Fourth Street, Columbus 16, Ohio.



Jeffrey spiral conveyors are available in many styles for moving dry, bulk materials. Compact, they occupy minimum space. Convenient, they can be fed or discharged at any point along their length.



Components of Jeffrey bucket elevators and other conveyors can be constructed to withstand corrosive attack, assuring long life and safeguarding materials handled.

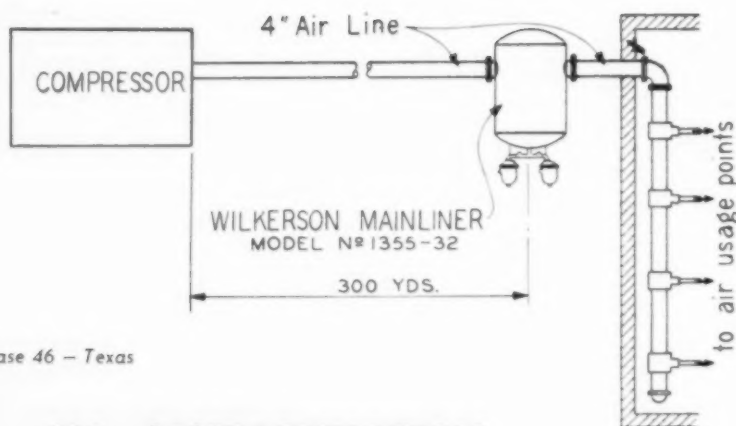


For in-plant conveying or for belts extending across country, Jeffrey PERMASEAL® idlers offer every feature essential to belt protection, dependability and long service.

CONVEYING • PROCESSING • MINING EQUIPMENT... TRANS-
 MISSION MACHINERY... CONTRACT MANUFACTURING



JEFFREY



Case 46 — Texas

NO CONTAMINATION Filter extends air tool life

IN A Southwestern aircraft manufacturing plant, engineers found it necessary to remove water, sludge condensate and oil vapor contaminants from a 4-in. main air line, which served approximately 1,000 air usage out-

lets. The contamination was causing extensive wear and damage to air operated tools and equipment.

The plant engineering department considered purchasing individual separators and/or filters for various points of use, but the

total cost would have exceeded \$10,000. They also considered the high maintenance costs that could accompany this many units.

A sizeable initial saving was made by purchasing a Wilkerson Corporation Filterator, Model 1315-32, which separates the moisture and sludge, filters the air of micron particles to as small as 5 microns, and traps and holds oil and oil vapors in the absorbent textile cartridge within the unit. Sketch shows how unit was installed on the main 4-in. air line which serves 1,000 outlets in the plant.

Results with the \$4,800 Wilkerson installation have been highly satisfactory. Over a seven month period only traces of oil contamination were experienced at isolated points in the system; and these were attributed to residual contamination existing in the air system prior to the Wilkerson installation. By proper filtration, the company has extended the life of their air tools and reduced maintenance expenses.

New! CRESCENT
MAKES BELT REPAIR HISTORY!

with the new
CRESCENT Belt Repair Kit
featuring
20 ASSORTED SIZES OF FASTENER PLATES
and 144 ASSORTED RIVETS IN CORRECT
SIZES FOR QUICK, LASTING REPAIRS.

Now make belt repairs no matter what size rip, tear, hole, in a matter of minutes with the handy CRESCENT KIT. Select the right size of plate and rivet from this assortment and all you need is a hammer...for a quick and permanent repair. You save many times its cost in longer belt wear by timely repairs.

\$495

Available from your distributors or write to: SPI-I
CRESCENT BELT FASTENER CO.
Serving U. S. Industry since 1897
381 Fourth Avenue • New York 16, N. Y.

Case 47 — Gas Pipeline

Large Motor Drives Compressor

A SOUTHEASTERN gas pipeline is recording excellent results from its first use of a large electric motor to drive a booster station centrifugal compressor.

The 12,500 hp synchronous motor built by General Electric Co.'s Large Motor & Generator Dept. helps to compress from 700 to 800 million cu ft of gas per day to supply Eastern Seaboard consumers from wells in southwest.

The motor is rated 900 rpm at 4,000 volts, unity power factor and is force ventilated.

It drives the compressor through a single ratio double helical precision type gear made by G-E Medium Steam Turbine Generator & Gear Dept. at Lynn, Mass. The gear is rated 900/4820 rpm. The compressor has manually adjustable guide vanes for adjusting station, discharge pressure.



These 5 "tips" can help you end sump pumping problems *once and for all*

Here are 5 ways to prevent sump pumping trouble before it starts *and* cut maintenance time—with Goulds Fig. 3171 vertical centrifugal sump pump.

1. **Put the pump at the proper depth** without paying the extra cost for special shaft lengths and pipe columns. Goulds Fig. 3171 fits any pit from 2 to 20 feet deep—comes in standard lengths of 6 inch increments.
2. **Maintain pump alignment** permanently by means of male and female fits on Goulds Fig. 3171.
3. **Prevent damage by fumes, weather, moisture** with these features of the Fig. 3171: completely sealed-in upper bearing; Falk all-steel couplings; special vapor-proof construction (upon request).
4. **Make external adjustments** for impeller clearance with Goulds Fig. 3171—to save time, trouble. Replace upper bearings without disturbing pump or piping merely by removing the motor and coupling from above.
5. **Adapt to changing pit depths** without ordering a whole new unit. You can adapt this pump *in the field* for new depth or pump ratings simply by ordering a few new parts.

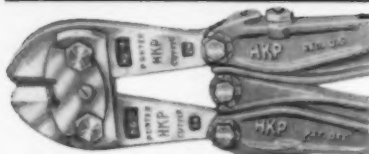
You can get Goulds Fig. 3171 as a single or duplex unit—completely assembled with sump cover—for wet or dry pits, with capacities to 1080 GPM, heads to 290 ft. For more details, contact your Goulds dealer, or write for your copy of Bulletin 726.2.

GOULDS PUMPS, INC.

Dept. SP-108

Seneca Falls, N. Y.

THERE'S A



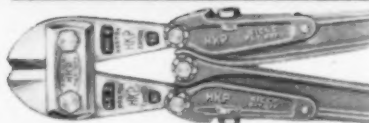
The PORTER CENTER-CUT CUTTER — in 6 sizes, for cutting up to 3/4". Our most popular tool. Ideal for general free cutting of soft and medium hard steel. Other models for HARDER METALS.

HKP PORTER CUTTER



The PORTER WORK-STATION CUTTER — in 3 sizes, up to 1/2" capacity. For continuous cutting operations it can increase the metal-cutting capacities of one man up to 300%! Saves time, work, money! Leaves one hand free to feed or hold material.

FOR EVERY



The PORTER HEAVY DUTY CUTTER — in 3 sizes, up to 3/4" capacity. Specially designed for those rugged jobs in steel mills, construction companies and other heavy industries!

METAL CUTTING JOB

SAVE TIME AND MONEY!
Over 100 Cutters in Various Sizes and Types — Hand or Power Operated

Contact your Industrial Distributor or write direct for your

FREE CATALOG!

CUT—
up to 3/4" rods with HAND OPERATED TOOLS
up to 1 3/4" rods and 2 1/2" power cable with POWER OPERATED TOOLS.

H. K. PORTER, inc.
Somerville 43, Mass.

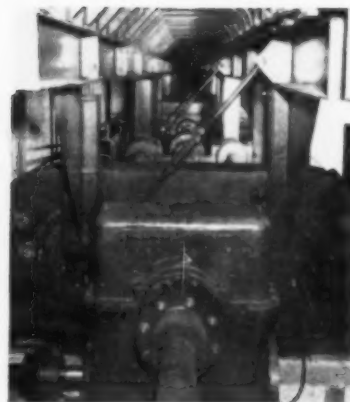
Case 48 — Ga. Steel Mill

Speed Reduction Costs Reduced

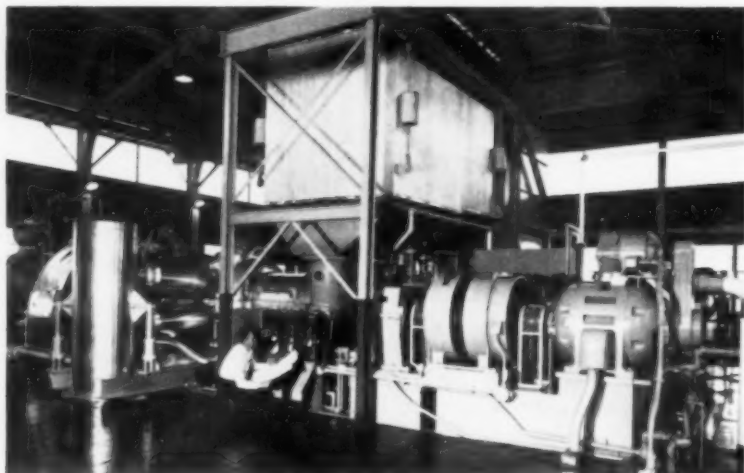
TWO LARGE Cleveland Worm

Gear Speed Reducers are driving the cooling bed carry-over at Atlantic Steel Company's 13" Merchant bar and rod mill in Atlanta, Georgia. The gear units by providing a compact, powerful, right-angle drive save valuable space in the close-quartered pit running the length of the mill. Adequate lubrication through a carefully worked out oiling system prolongs gear and bearing life, thereby reducing maintenance costs considerably.

Handling huge burden and impact from the cooling beds, the



reducer housings are internally heavily-ribbed to minimize deflection under load and enable withstanding great shock. Because of its crushing action on the teeth rather than cantilever load used in other gearing, worm gearing even when severely overloaded has only remote possibility of failing.



Case 49 — Compressor Station

Gas Turbine Drives Compressor

DEMANDS for additional natural gas are being met by the El Paso Natural Gas Company with new equipment such as this gas turbine operated compressor station at Belen, N. M.

These General Electric turbines help the company deliver 2,673,-

000,000 cu ft of gas daily to consumers in West Texas, New Mexico, Arizona, Nevada and California.

This equipment duplicates a simultaneously installed station at Caprock, N. M., and is similar to 28 more General Electric gas tur-

Another new development by Iron Fireman

MicroMist

HEAVY OIL
BURNER

TWO-STAGE ATOMIZER
CHANGES HEAVY OIL TO
AN AERATED FOG, WITH
THE CHARACTERISTICS
OF A GAS—NOT A SPRAY



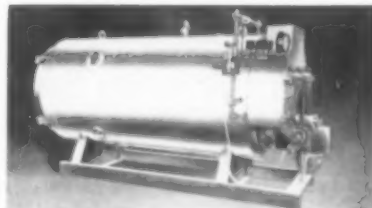
Now a medium size burner that fires low cost oils

New two-stage atomizing principle

The heart of the Iron Fireman MicroMist burner is an ingenious compressor-atomizer. The compressor reduces the oil to an air mixed spray (which is as far as other burners go) then by the heat of compression, into an air-oil vapor. The oil is so finely divided that it becomes an oil mist or fog that will remain in suspension for several hours. It is easily and directly ignited by an electric spark (does not require gas ignition). Now medium size heating plants (previously restricted to light, expensive oils) can switch to low cost heavy oil with substantial savings in fuel costs.

Note these additional features

The Iron Fireman MicroMist burner is as easily installed as a conventional gun type burner. It has two important uses. (1) As a conversion burner with any type of boiler. No special boiler front is required. (2) As a component part of a packaged boiler-burner unit. The choice of oil grades is almost unlimited (from No. 5 down to the lightest fuel oils). Integral control panel is wired and tested at the factory. Fuel and maintenance costs are low. Eliminates frequent nozzle inspection and cleaning, because of the large orifice to disperse the oil mist. Fires low-cost, heavy oils with little more attention than a domestic oil burner.



Available as a complete package ready to operate . . . Scotch boiler, burner, controls

Installation requires little more than service connections. Easily specified from catalog list of sizes and capacities. Available for either natural or forced draft. Firing unit can be ordered separately for installation in any type of boiler.

Send for more information

IRON FIREMAN

AUTOMATIC FIRING EQUIPMENT
FOR HEATING, POWER, PROCESSING



IRON FIREMAN MANUFACTURING CO.
3125 W. 106th Street, Cleveland 11, Ohio
(In Canada, 80 Ward Street, Toronto, Ontario)
Please send me more information and specifications on the Iron Fireman MicroMist burner.

Name _____
Firm _____
Address _____
City _____ Zone _____ State _____

Best way to heat a tank?



Call your Chromalox Man for the ANSWER

Each of the heaters shown above has significant advantages for various applications. Clockwise, from the left foreground . . .

- Chromalox Strip Heater clamps on, to heat tanks, pipes, and kettles by contact.
- Screw Plug Immersion Heater has standard pipe threads and heavy-duty elements of steel, copper, stainless steel or alloy for heating water, oils and corrosive solutions.
- Portable Tank Immersion Heater requires no tank opening, puts heat at the bottom of the tank.
- Coiled "Over-the-Side" Heater for tanks up to 4 feet deep. Lead sheath.
- High Capacity Flange-Type Heater packs many kilowatts into small space.

Call your Chromalox Representative for the fast, clean, safe, Electrical answer to all your heating problems. 2654



CHROMALOX Electric Heat
Edwin L. Wiegand Company
7563 Thomas Boulevard, Pittsburgh 8, Pa.

bines on EPNG's Southern Division.

A big factor in meeting the demand for more gas has been the low operating costs and high flexibility recorded by this combustion gas turbine.

Maintenance costs have been at a minimum and a preventive maintenance program has resulted in practically 100% availability.

Case 50 — North Carolina

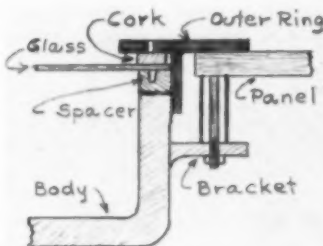
Gauge Rim Wrench

THE SKETCH shows the mounting of outdoor steam pressure gauges on our 100,000 kw turbine.

During our first planned outage of this unit we ran into trouble when we started to remove the gauges for recalibration and testing. No means was provided to remove the flush mounted face on the gauge. Due to the construction inside the cabinet, it was necessary that the face be removed before the gauge could be removed from the cabinet.

We finally removed the rim, by tapping a blunt nose chisel along the rim. This caused the metal to peel off in several places and made a bad appearance.

We noted that under the glass was a threaded metal retaining ring, which was tightened by means of two small holes in the ring. We removed the retaining ring, glass face and cork ring. Then we replaced the retaining ring and screwed it to the bottom of the thread. Using the two holes in the retaining ring as a guide, we drilled two holes thru to the outside of the outer flush rim.



To make a spanner wrench to fit both rings we used a piece of

1/2-in. angle. We drilled and tapped the angle to take pins to fit the holes in the outside of the flush rim. We then put in the cork ring, glass and retaining ring; put the gauge back in the panel and tightened the flush rim with the spanner wrench.

The wrench was made short enough to remove and tighten the inside retaining ring.

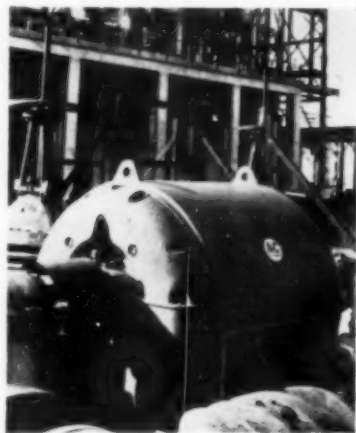
G. G. AVANT

Louis V. Sutton Steam Plant
Wilmington, N. C.

Case 51 — Southern Refinery

No Enclosure Necessary

A SAVING of approximately 30% (in installation costs) resulted from the recent outdoor installation at a Southern refinery of this Allis-Chalmers squirrel-cage induction motor with Super-Seal open drip-proof enclosure. The motor, which drives a pump, is rated 600 hp, 2300 volts, 900 rpm, with 60 C temperature rise and 15% service factor.



The minimum of enclosure that could be applied in this type of area with any other insulation system would have to be weather-protected. Use of Silco-Flex all-silicone rubber coil insulation makes additional enclosures unnecessary. In addition, this motor has a 15% service factor rating, a feature the weather-protected alternate would not have.

PAINTS and PROTECTIVE COATINGS

**Exclusive 16-page report by S. L. TERRY, Engineer,
Southwestern Public Service Co., Amarillo, Texas**

BECAUSE of "open type" construction, the majority of process and utility plants in the South-Southwest are subjected to extreme exposure conditions, paints and protective coatings must offer superior protection from heat, high humidity, salt air and chemical fumes.

To help Southern & Southwestern plant engineering personnel get the right material for the job, get it properly applied at a reasonable cost for service and protection, SPI's November issue will feature:

1. 16-page Paint Systems Manual

An adaptation of Southwestern Public Service Company's plant-tested manual covering: Selection Factors . . . Surface Preparation . . . Surface Pretreatments . . . Primers . . . Finish Coats . . . Special Paints and Materials . . . Maintenance and Repainting . . . Systems.

2. 4-page Reference Tabulation

This special supplemental tabulation will "brief" up-to-date manufacturers' catalogs and bulletins on paints, coatings and application equipment.

Check These Painting Methods

Plant-Tested in the South-Southwest

Man-in-the-Plant Safety Manual

SAFETY is a never ending job requiring constant attention. Recognizing this fact, Chemstrand Corporation has built its award-winning safety program around employee participation.

An example of this information and participation program is a safety manual prepared for the Maintenance Department at the company's Acrilan acrylic fiber plant at Decatur, Alabama. A manual was chosen as the most direct way to reach the greatest number of people.

Safety rules must be understood by the mechanics that will use them to be effective. Using this premise as a guide, a committee assembling the manual consisted



of one engineer, one foreman and two mechanics. Every man in the Maintenance Department was requested to submit rules for the manual to his foreman. The foreman then forwarded them to the committee along with additional rules that they thought were appropriate.

The committee reviewed all safety rules and suggestions. Then,

general rules that applied to all areas were separated and placed at the front of the manual. Rules peculiar to each skill was grouped together and placed after the general rules. Rewording, with the agreement of the mechanics, was necessary but essentially all rules remained as submitted.

The result is a 31 page manual 4" wide and 6½" long. This size booklet is easy to carry and the information in it is a handy guide to most safety questions. When a new mechanic enters the Maintenance Department he is issued a Safety Manual and given instructions in the safe performance of his job.

Reference material was included in the appendix. This includes:

1. Rigging Tables
2. Mechanical & Electrical Clearance Procedures
3. Safety Standard for Issuance of Hazardous Area Work Permits
4. National Electrical Code for Hazardous Locations
5. Electrical Classification of Work Areas
6. Safety Standard for Performance of Work in Vessels
7. Autocall Fire Zone Numbers

By B. K. BERRY
Area Engineer
Chemstrand Corp.
Decatur, Ala.

This Self-Contained Fluid Cooling System ... gives most accurate temperature control



Applied in cooling industrial machines or processes to temperatures approaching the ambient wet-bulb, the NIAGARA Aero HEAT EXCHANGER is independent of any more than a nominal water supply or disposal. The coolant system is a closed one, free from dirt and maintenance troubles.

Heat is removed from your process at the rate of input, giving you precisely the temperature you require and assuring the quality of your product. Heat may be added to prevent freezing in winter or

for better control in a warm-up period. Liquids or gases are cooled with equal effectiveness.

Heat is rejected outdoors. Only the little water evaporated on the cooling coils in the air stream, or discharged to prevent hardness build-up, is consumed.

Niagara sectional construction saves you much installation and upkeep expense, gives full access to all interior parts and piping. Your equipment always gives you full capacity and "new plant" efficiency.

Write for Niagara Bulletin No. 132 for complete information

NIAGARA BLOWER COMPANY
Dept. SP-10, 405 Lexington Ave., New York 17, N. Y.
District Engineers in Principal Cities of U. S. and Canada

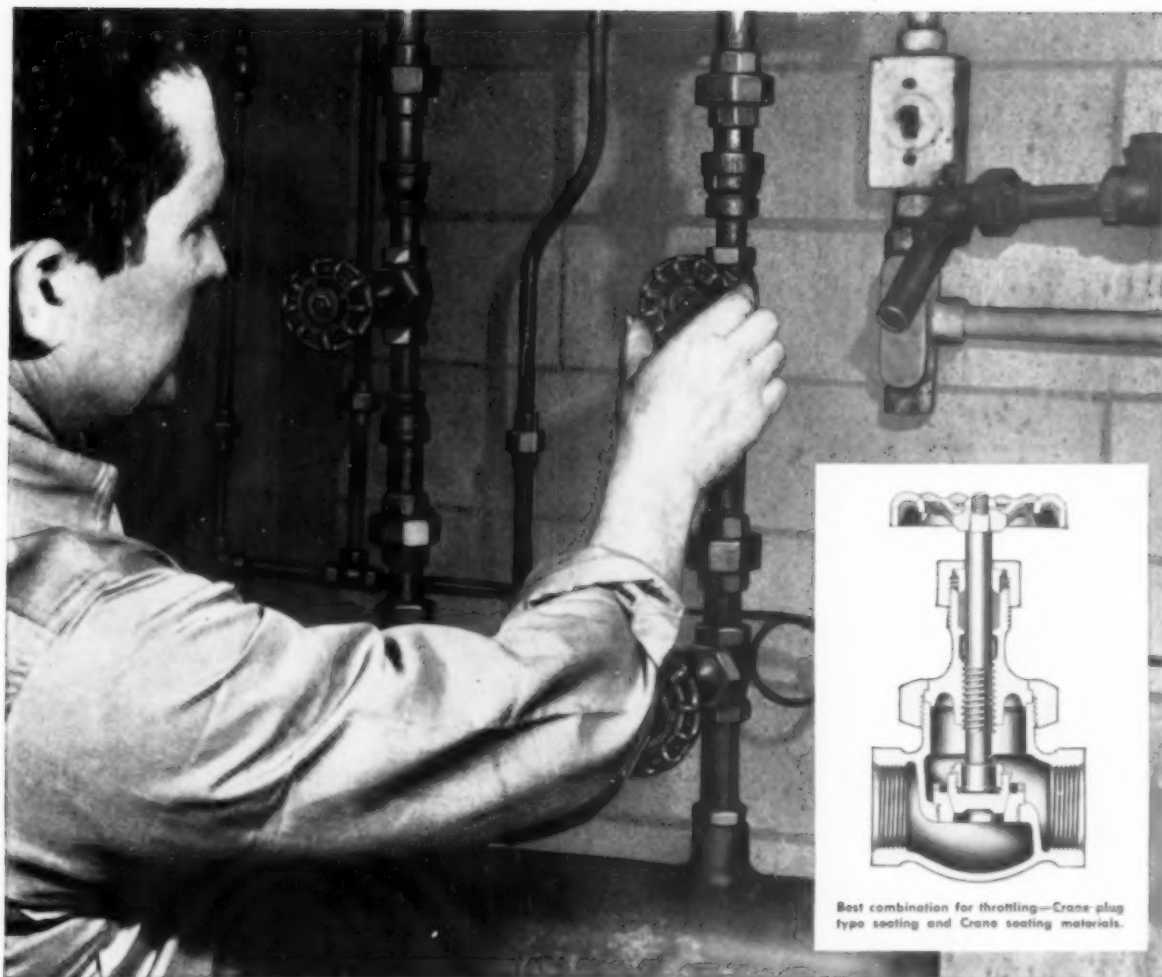
Case 53 — Florida

Draft Increased

IN DRYING pebble phosphate with our two 8 x 80 ft Allis-Chalmers rotary dryers, we found it necessary to increase the draft considerably with our American Blowers in order to reach maximum capacity of our dryers.

This was accomplished by swapping the 300 hp motors from the dryers to the blowers and likewise the 100 hp motors from the blowers to the dryers. Pulleys and V-belts were changed to give the desired cfm.

By B. L. BLACKWELL, Drying Superintendent, The American Agricultural Chemical Co., Pierce, Fla.



Best combination for throttling—Crane plug type seating and Crane seating materials.

Surprising savings for this power plant with Crane bronze throttling valves

At least once a year, this power plant of a leading machine tool builder was replacing the valves in the $\frac{1}{2}$ -inch continuous blowdown lines on its 60,000-pound boiler.

They were high-priced valves, but they couldn't take the continual throttling service. The seats cut out rapidly... blowdown regulation was lost... valve costs kept rising.

Thirty-one months ago this plant replaced the short-lived valves with Crane No. 212P, 200-pound bronze globe valves

with plug type disc. Most of the time these Crane valves have been operating at less than half-open.

Yet, at every inspection to date, they've been found O.K.—no seat damage... no loss of regulation... no maintenance needed. Another proof of the economy of Crane quality!

To cut your valve and piping maintenance costs—on steam or any fluid—call in your local Crane Man. He has more to offer in money-saving piping materials.



COST-SAVING IDEAS FOR YOU in this free 36-page book of "Valve Performance Facts." Get your copy from your Crane Man or write to address below.

CRANE VALVES & FITTINGS

PIPE • PLUMBING • KITCHENS • HEATING • AIR CONDITIONING

Since 1855—Crane Co., General Offices: Chicago 5, Ill. Branches and Wholesalers Serving All Areas

SOUTHERN POWER & INDUSTRY for OCTOBER, 1958

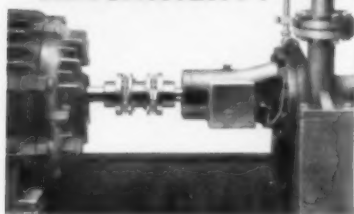
For more information, use Reply Card—Page 115

101

THOMAS

FLEXIBLE COUPLINGS

Protect your PUMPS
and other
Indispensable
MACHINERY!



NO LUBRICATION
NO MAINTENANCE
NO WEARING PARTS

Future maintenance costs and shutdowns are eliminated when you install Thomas Flexible Couplings. These all-metal couplings are open for inspection while running.

They will protect your equipment and extend the life of your machines.

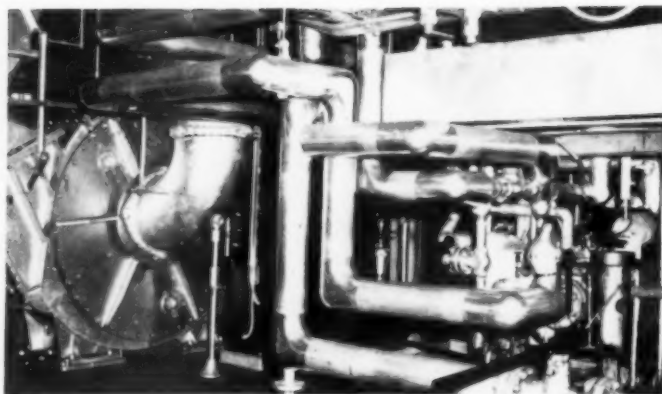
Properly installed and operated within rated conditions, Thomas Flexible Couplings should last a lifetime.

**UNDER LOAD and MISALIGNMENT
ONLY THOMAS FLEXIBLE COUPLINGS
OFFER ALL THESE ADVANTAGES:**

- ▶ Freedom from Backlash
- ▶ Torsional Rigidity
- ▶ Free End Float
- ▶ Smooth Continuous Drive with Constant Rotational Velocity
- ▶ Visual Inspection While in Operation
- ▶ Original Balance for Life
- ▶ No Lubrication
- ▶ No Wearing Parts
- ▶ No Maintenance

Write for Engineering Catalog

**THOMAS FLEXIBLE
COUPLING CO.**
WARREN, PENNSYLVANIA, U.S.A.



Case 54 — Kansas Utility

Enclosing Right Angle Turns

THIS installation at Kansas Power and Light Co.'s new Tecumseh, Kansas plant shows how right-angle turns in insulated pipelines, often a trouble spot for insulating material, can be quickly and attractively enclosed. Over 400 Humped Elbows, produced from Alcoa sheet by General Aluminum Supply Co., Kansas City, Mo., were installed by the Kansas City Insulation Co.

Elbows have an almost squared-off, rather than rounded contour which give them an unusual "humped" appearance. Containing ample space to fit both sharp or gently curving turns, without cutting away insulation, the Humped Elbow greatly simplifies application. On the average, only nine minutes are required to install an elbow. Twelve sizes can fit 107 combinations of pipe diameters and insulation thicknesses up to an O.D. of 12.81-in.



Case 55 — Paper Mill

Colored Water Cleared

MAIN source of process water for a Southern paper mill is a small stream containing a soft but

highly colored water. The stream, which is greatly affected by seasonal rains and other factors, sometime has a color content of 500 ppm. During certain seasons it stays at 300 ppm for several consecutive months. This naturally occurring color in the water had

HEADING FOR

5000 PSI

YUBA ALL-WELDED FEEDWATER HEATERS

Tubes are welded into tube sheets and then extensively tested against specimens of rolled joints. At elevated pressures, rolled joints leaked and blew out of the test bombs, but at 9600 psi the welded tubes held firm.

Twenty-five years ago it was an accomplishment to put 1000 psi into a feedwater heater. Ten years ago, 2500. Today Yuba feedwater heaters are at 4000 psi. Next step — 5000.

A chief reason for the present high pressures and the promise of even higher is Yuba's all-welded Multilok Closure design: tubes welded, not rolled, into tube sheets; shells welded to heads and channels. No flanges or bolting required. In the Multilok Closure, a split key ring in shear absorbs the force resulting from the internal pressure on the cover, and the steel torus ring welded to the channel and to the cover provides the hydraulic seal. Destructive tests on Yuba's well-known Multilok Closure proved the strength of the design of the split key ring construction and the soundness of the torus ring design.

The all-weld design already has set an industry standard and its proved performance has brought orders from the major power companies here and abroad.

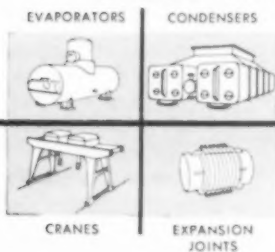
Your inquiry is cordially invited.

Power equipment engineered and manufactured by
YUBA HEAT TRANSFER DIVISION
Honesdale, Pa.

Production facilities in the west
YUBA MANUFACTURING DIVISION
Benicia, Calif.

YUBA CONSOLIDATED INDUSTRIES, INC.

Other Yuba products for the Power Industry





Lubriplate No. 630-2 is a high temperature, extreme pressure, water-repellent, grease type lubricant. Ideal for the general lubrication of Industrial, Automotive, Construction, Farm and Marine Equipment. Lubriplate Grease Gun Cartridges provide an easy, quick, economical means of application. Prevent the waste and mess of hand filling. Packed 10 Cartridges in a handy carrying carton.

REGARDLESS OF THE SIZE AND TYPE OF YOUR MACHINERY, LUBRIPLATE LUBRICANTS WILL IMPROVE ITS OPERATION AND REDUCE MAINTENANCE

For nearest LUBRIPLATE distributor see Classified Telephone Directory. Write for free "LUBRIPLATE DATA BOOK"... a valuable treatise on lubrication. LUBRIPLATE DIVISION, Fiske Brothers Refining Company, Newark 5, N. J. or Toledo 5, Ohio.



to be eliminated because it was affecting the quality of the high grade white paper being produced.

After careful study it was decided to treat the incoming water with three 80' diameter Graver Reactivators of 5 mgd capacity each, and eight 16' x 30' Graver gravity filters of the rapid sand type, each rated at 3.1 gpm/sq ft. These units are designed to remove color and turbidity.

The Reactivator recirculates pre-formed sludge with incoming water and chemicals. This forms a slurry which is then recirculated. Sludge falls to the bottom and

clear water rises to the outlet. Design features which help accomplish liquid-solids separation in the Reactivator include a continually increasing rising area which causes a decrease in speed and better particle separation; a separately driven sludge scraper and recirculator; controlled sludge recirculation; low sludge level, and sludge removal over the entire bottom area of the unit.

After water is clarified, it is chlorinated and then passed to the filters. From there it enters the plant for use in processing the pulp and tissue.

proved very successful in curbing corrosion, etc.

Being a volatile compound it was necessary to keep Morphaline in a drum a safe distance from the plant in a warehouse and carry a pint at a time to the plant (a pint was the approximate requirement for a convenient period of time).

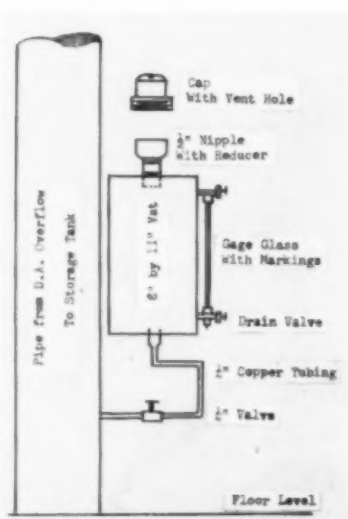
A small economical and safely constructed storage vat would solve our problem of making trips to the warehouse and still supply our needs. Plans were therefore made to install such a vat so it would empty directly into the storage tank of the No. 11 Boiler.

This small vat, 8" in diameter and 11" long, was constructed for our plant to keep the required amount of Morphaline in our return line system and eliminate guesswork. The gauge glass indicates, as accurate as necessary, the amount entering the system. Light metal straps, not shown in the sketch, anchor the vat to the overflow pipe.

A piece of 8" heavy duty pipe was cut 11" long and sheet iron was cut to fit both ends for the top and bottom. A hole was cut and tapped for a 1/2" nipple in the top and a cover was made for the nipple provided for pouring in the chemical.

In the bottom a 1/4" tap was made for copper tube fittings, and tubing with a 1/4" valve was run from the vat to the D.A. heater overflow line into the storage tank of No. 11 Boiler.

A small gauge glass was built



Case 56 - New Mexico

Morphaline Vat Economical and Safe

MORPHALINE, acting as an organic compound, releases a volatile alkaline vapor with steam and recirculates thru the condensate lines to the boiler feed pumps, causing a protective film to form on all lines involved. This, in turn, helps to maintain protective pH within the return system.

How much is to feed is of course determined according to the plant needs.

The Roswell Plant began using this compound in 1945 and it has

**Where a misstep costs \$500...
Blaw-Knox Electroforged® Steel Grating
provides safer non-slip footing**



*Stair falls cost industry
over \$60,000,000 a year.*

An average accident amounts to a loss of \$500 in claims.*

A good way to guard against these profit-eating accidents is to construct your stair treads, walkways and floors with Blaw-Knox Electroforged Steel Grating. Non-slip twisted crossbars and a wide variety of bearing bars are available to meet every kind of working condition—safely solving the most hazardous skid situations.

Rigid, one-piece construction makes installation easy. Once on the job, Blaw-Knox grating practically takes care of itself. There is nothing to wear, nothing to patch, no dirt collecting corners to clean. It goes anywhere, fitting neatly around pipes, beams and machinery, admitting plenty of light and air to the area.

Made to your specifications, Blaw-Knox grating provides new highs in safety, easy up-keep and flexible application. For new ideas about grating—including space saving platforms and shelving, write for Bulletin 2486.

*Based on a study analyzing 803 compensable work injury claims closed in Illinois involving stairs and steps.

BLAW-KNOX

BLAW-KNOX COMPANY

*Equipment Division
Dept. J, Pittsburgh 38, Pennsylvania*

on the side of the vat and markings on the glass were made indicating pints of Morphaline entering the storage tank ($\frac{5}{8}$ " of glass approximately 1 pint).

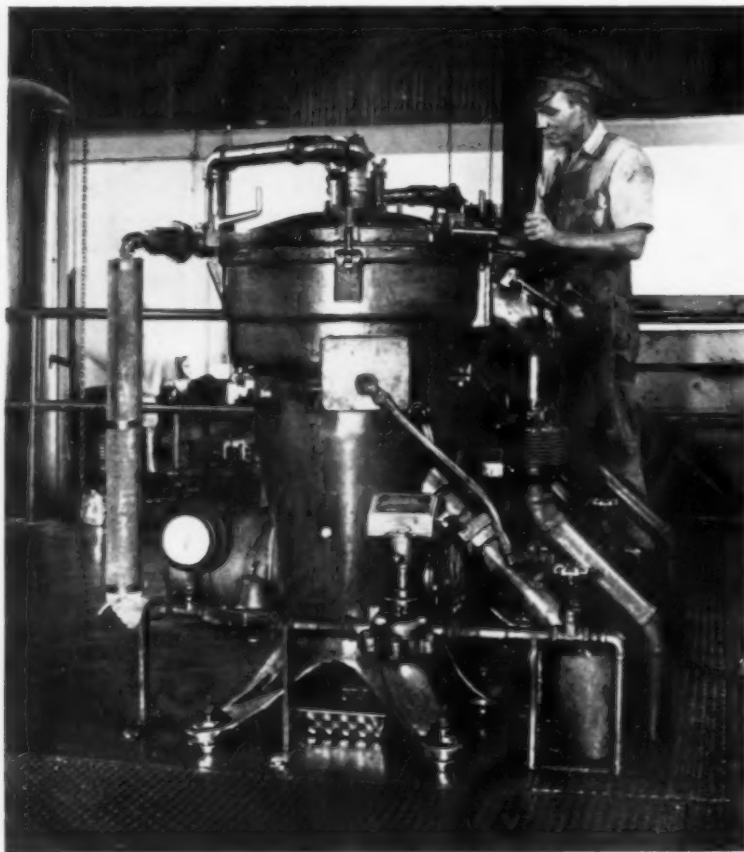
The vat being mounted on the

D.A. heater line to the tank a few feet from the floor gives adequate height for pouring in Morphaline from one gallon containers and holds slightly over two gallons.

The results have proved eco-

nomical as the construction cost was very small. It is a very safe method of handling the chemical.

By **BOB McALISTER**, Roswell Power Plant, Southwestern Public Service, Roswell, N. M.



Case 57 — Fla. Residual Fuel Operation

Cleaning Is Important Savings With No. 6 Fuel Oil

CONVERTING from No. 2 fuel oil to residual fuel operation has saved an average of \$72,000 annually for Clay Electric Co-operative, Inc., an REA Project in Keystone Heights, Florida, according to Robert J. Dodd, the chief engineer.

Clay Electric operates four Cooper-Bessemer diesel engines as the prime movers in the power plant. The lower cost No. 6 resi-

dual fuel has been burned for several years, and the maintenance costs on the engines have been no higher than before the switch was made.

Of course, heavy residual fuels can be burned in diesel engines only if they are properly purified, Mr. Dodd cautions. His company uses two De Laval heavy oil centrifugal purifiers to accomplish this critical processing step. The

machines, of the Model 94 type, are equipped with 5 hp motors.

In purifying residual fuel, it is necessary to remove water, pipe scale, rust, dirt, and other foreign contaminants that would cause abrasion or erosion on either the injection equipment or the internal parts of the engine.

No. 6 fuel is among the heaviest residuals and is difficult to purify unless the equipment is right and the processing techniques properly selected. No. 6 fuel can have a maximum viscosity of 300 Saybolt Seconds Furol at 122 F, which corresponds to approximately 8100 SSU at 100 F — which makes it very viscous.

Viscosity is a very important fuel characteristic. The higher the viscosity, the greater the amount of heat that must be applied to the oil before purifying it and injecting it into the engine cylinder. In handling No. 6 residual, Mr. Dodd reports that he maintains a temperature of approximately 225 F - 230 F and 40 psi.

Recommended purification technique calls for the use of large size centrifugal purifiers operated at relatively low capacities. For instance, while the Model 94 machines have a normal capacity of 1500 gph on No. 2 fuel oil in accordance with Navy Specifications, in the purification of No. 6 fuel oil they operate at capacities from 75-150 gph.

Quantity of dirt in residual oil varies widely. In a plant of the size of Keystone Heights, as much as 100 lb of dirt must be removed daily by the centrifuges. The De Laval 94 machines have a dirt holding capacity of up to 14 lb of dirt without affecting operations.

According to Mr. Dodd, the most important factor in centrifuge operation, next to dirt-holding capacity, is uniform separating efficiency.



1,000 MVA DRAW-OUT SWITCHGEAR *in outdoor walk-in enclosures*



incorporates

**25 YEARS of
1,000 MVA**

OPERATING EXPERIENCE

RATINGS

Voltage Range: 13.8 KV through 34.5 KV* A.S.A. (*500 MVA at 5 KV)

Continuous Current Range: 800 Amps through 4,000 Amps.

Breaker Tripping Time: 2 or 3 cycles depending on voltage rating.

Basic Dimensions of a Typical 14.4 or 23 KV, 1000 MVA, 1200 Amp Cubicle:
39" wide x 90" deep x 122" high

13.8 KV, 1200 Amp, 1000 MVA Draw-Out Switchgear in a large industrial plant. Note ample working area in the walk-in outdoor enclosure.

One of the removable 13.8 KV, 1200 Amp, 1000 MVA units in withdrawn position.

This proven-in-use 1000 MVA draw-out switchgear has an unusual record for reliable performance and minimum maintenance. In electro-chemical plant installations as many as 100 operations at full interrupting capacity *without intermediate maintenance* have been reported. For furnace duty in the metallurgical industry up to 25,000 routine switching operations without intermediate maintenance have likewise been recorded.

The pre-fabricated, walk-in type of outdoor enclosure cuts construction costs by eliminating an expensive building to house this switchgear. Complete weather protection and ample aisle space is provided for the very infrequent maintenance required for this airblast switchgear.

Find out how you can adapt this equipment to your needs. Contact Brown Boveri Corporation, 19 Rector Street, New York 6, N. Y.



BROWN BOVERI CORPORATION

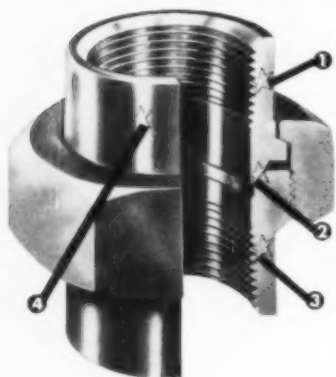
19 RECTOR STREET • NEW YORK 6, N. Y.

Atlanta, Ga. • Birmingham, Ala. • Boston, Mass. • Buffalo, N. Y. • Charlotte, N. C. • Chicago, Ill. • Cleveland, O. • Dallas, Tex. • Denver, Colo. • Detroit, Mich. • Hamilton, O. • Jacksonville, Fla. • Kansas City, Mo. • Knoxville, Tenn. • Miami, Fla. • Minneapolis, Minn. • New Orleans, La. • New York, N. Y. • Pasadena, Cal. • Pittsburgh, Pa. • Portland, Ore. • Roanoke, Va. • San Francisco, Cal. • San Juan, P. R. • Syracuse, N. Y. • Tucson, Ariz.



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*gives you all these
features for your
forged steel pipe
union requirements*



1. Uniform walls for even expansion and contraction under temperature changes. They follow the pipe!

2. Catawissa Ball-to-Angle Seats give you a "Perfect Seal" regardless of pipe alignment!

3. More than adequate wall thicknesses give you Catawissa's 3-to-1 Safety Factor (3000-lb. service, 9000-lb. test; 6000-lb. service, 18000-lb. test!)

4. Round, straight barrels for fast wrenching. No uneven or tapered surfaces to cause wrench slips or wrench locking!

Catawissa Perfect Seal Pipe Unions are made by Union Specialists from 80,000 lb. tensile strength steel (ASTM Spec. A-105-55T, Grade II). Steel forgings from our own forging mill are closely checked for imperfections... and finishing on modern, automatic machines with close inspection during and after production give you pipe unions second to none!

Write for Catalog 58 showing the complete Catawissa line of Perfect Seal Products.

for complete, guaranteed satisfaction

*... always specify
CATAWISSA*

CATAWISSA VALVE & FITTINGS CO.
CATAWISSA • PENNSYLVANIA

Southern News Briefs — Continued from Page 24

Riley Stoker Has New Southeastern Office

Riley Stoker Corporation has announced the opening of a district sales office in the Prudential Building, Jacksonville, Florida. This office will handle the sale of Riley steam generating and fuel burning equipment in the states of **Florida, Georgia, South Carolina** and the eastern part of **Alabama**. For the time being this office will also handle sales in the states of **North Carolina, Virginia** and the eastern part of **Tennessee**.



The office will be managed by **Curtis W. Novak**, who began his association with Riley Stoker Corporation in 1935 after attending the University of New Hampshire. Prior to his recent reassociation with Riley's, Mr. Novak was an eastern manufacturer's representative for power plant equipment.

Partlow — Ga. & Tenn.

The **Partlow Corporation**, New Hartford, New York, manufacturers of industrial temperature controls, has named the **Will Process Equipment Corporation of Georgia**, as exclusive agents for all Partlow products in **Georgia** and **Eastern Tennessee**.

Headquarters for the territory will be 890 Chattahoochee Ave., Atlanta, according to **Garrett S. Parker**, general manager of the Georgia Will Process organization. The Atlanta firm is a subsidiary of the Will Corporation, Rochester, N. Y. In addition to Mr. Parker, a registered engineer in Georgia and Tennessee, the territory will be covered by three sales engineers.

The Partlow line includes in-

dicating and recording electric temperature and humidity controls, mechanical gas controls, safety equipment, industrial thermometers and timers for the industrial heating fields, chemical and food process industries, railroad and truck refrigeration and allied fields.

A. M. Byers — S & SW

Assignments as field service engineers have been made by **A. M. Byers Company** of Pittsburgh.

Earl M. Jones, Pensacola, Fla., has been assigned to the company's Atlanta division. He was formerly associated with Monsanto Chemical Co. and Industrial Marine Supply Co.

Assigned to the **Houston, Tex.** Division Office are **G. F. Grey** of New Orleans, La. and **W. O. Williams** of Houston. The office is located in the Mellie Esperson Building.

Mr. Grey was formerly associated with Diamond Match Co., both in Springfield, Mass. and New York City, and also the Dictaphone Corp.

Mr. Williams was employed by the Southern States Life Insurance Co., National Supply Co. and Standco Brake Lining Co., all of Houston.

B&W Tubular Prod. Sthw. Promotions

The promotion of three men in the sales department of **The Babcock & Wilcox Company's** Tubular Products division has been announced by **Leon B. Wohlgenuth**, general sales manager of the division.

G. H. Weight, formerly Southwest district sales manager, has been made sales manager — middle states. His headquarters will be in the Chicago, Ill., district sales office.

J. H. Roach, of the Houston, Tex., office, is named district sales manager of the Tulsa, Okla., office. The office is located at 427 South Boston Street.

W. C. Mohrman, of the Tulsa office, becomes district sales manager of the Houston office, located at 2134 Welch Street.

Mr. Weight succeeds Mr. Wohlgenuth, who was recently appointed general sales manager for the division.

National Power Show New York — Dec. 1-5

More than 200 manufacturers of power and allied equipment have contracted for space in the **23rd National Exposition of Power and Mechanical Engineering**. The Exposition will be held at the New York Coliseum next December 1 to 5.

As heretofore, the display will be staged under the auspices of The American Society of Mechanical Engineers, whose 78th annual meeting occurs concurrently.

Management of the Exposition remains under the International Exposition Co., with permanent headquarters at 480 Lexington Ave., New York 17, N. Y. E. K. Stevens is the exposition manager.

J. B. Shipp & Assoc. at Lake Charles, La.

J. Blake Shipp, P. E., has announced the opening of a new office at Room 15, Kaufman Bldg., Lake Charles, La. for **J. B. Shipp and Associates**, Consulting Engineers in the electrical and mechanical fields.

N.S.P.E. Officers

Dr. Clark A. Dunn, Stillwater, Oklahoma, has been elected president of the **National Society of Professional Engineers**.

A professor of civil engineering and executive director of the office of Engineering Research at Oklahoma State University, Dr. Dunn succeeds Garvin H. Dyer, of Independence, Missouri, as head of the 46,000-member engineering group.

Regional vice presidents and a treasurer were also elected for the administrative year which began in July, 1958 included: **John B. McGaughy**, Norfolk, Va., Southeastern Region, and **Noah E. Hull**, Houston, Southwestern Region.

Mr. McGaughy, elected for a second term as vice president, is a partner in the firm of Lublin, McGaughy and Associates, Architects and Consulting Engineers in Norfolk and Washington, D. C.

Mr. Hull is vice president and general manager of the Hughes Gun Company and assistant to the vice president, manufacturing, Hughes Tool Company.

Prat-Daniel — East

The **C. N. Eckhardt, Jr., Company** of Glyndon, Md. has been appointed sales engineer for the Thermobloc Division of **Prat-Daniel Corp.**, manufacturers of Thermobloc Space Heaters and Panelbloc Infra-red gas-fired radiant heaters.

Eckhardt will handle **Maryland, District of Columbia, northern Virginia** and portions of **West Virginia** and **Delaware**.

Goodrich-Gulf — Texas

Goodrich-Gulf Chemicals, Inc., has begun construction of additional facilities at its Port Neches, Texas Plant for the manufacture of carbon black masterbatch rubbers. The new facilities will cost in excess of a million dollars and are designed to produce a new type of dry man-made rubber containing carbon black. The manufacture of these rubbers will employ a new process which has been developed in large-scale pilot plant operations over the past year. These new rubbers offer to tire manufacturers a line of high quality, abrasive-resistant products superior to those presently available.

The Catalytic Construction Company, Philadelphia, Pennsylvania, is engineer and contractor and completion is scheduled for late in the year.

Dayton Rubber — South

Two new sales engineers have been named for **The Dayton Rubber Company's Industrial Division**.

Moffatt Sherard will cover South Carolina, parts of Georgia and North Carolina with headquarters in Columbia, S. C.

Josh Montgomery will cover North Carolina and Virginia for the Industrial Division. He will headquarter in Greensboro, N. C.

A-C — Charlotte

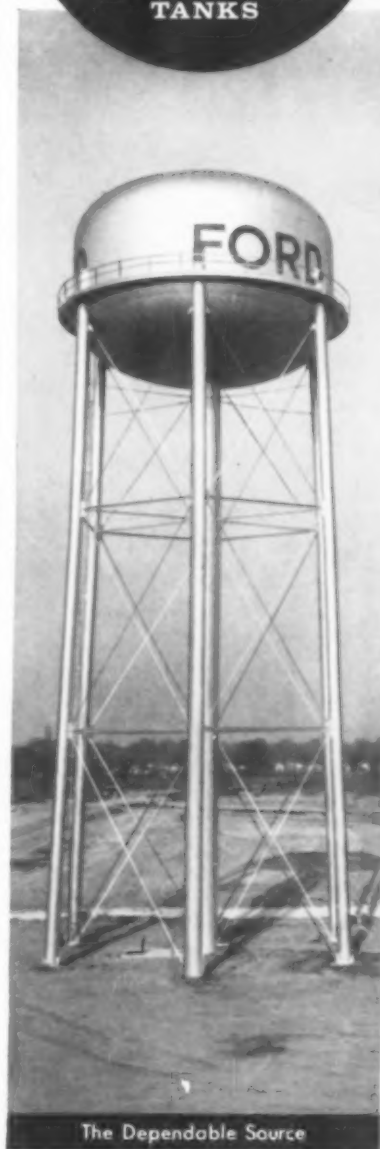
William Morrison has been assigned as a sales representative to the **Charlotte, N. C.**, district office of **Allis-Chalmers Industries Divisions**.

An industrial management graduate of Georgia Tech, Morrison recently completed Allis-Chalmers general purpose equipment training course.

INDUSTRIAL
PLANTS
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GRAVER

ELEVATED WATER
TANKS



The Dependable Source

GRAVER TANK & MFG. CO., INC.

EAST CHICAGO, INDIANA

New York • Philadelphia • Edge Moor, Delaware
Pittsburgh • Atlanta • Detroit • Chicago • Tulsa
Sand Springs, Oklahoma • Houston • New Orleans
Los Angeles • Fontana, California • San Francisco

for Elevated Water Tanks

Southern News Briefs (Continued)

Ajax Electric — SW

Appointment of the **Southwestern Engineering and Equipment Company**, 3906 Lemmon Ave., Dallas, Texas, has been announced by **Ajax Electric Company**, salt bath furnace manufacturers of Philadelphia. Southwestern represents the complete line of Ajax furnaces and related control equipment in **Texas, Oklahoma and Louisiana**. In addition to its Dallas headquarters, Southwestern has an office in Houston.

C & D Batteries — East

Robert J. Brown, 5532 Lothian Road, Baltimore, Md., has joined the sales organization of **C & D Batteries, Inc.** of Conshohocken, Pa. Brown is associated with the **Baltimore** branch of Charles F. Gross Associates, C & D's Philadelphia sales representatives.

American Engineering—Tex

American Engineering Co. has appointed Industrial Handling Engineers, 1200 Bissonnet, **Houston, Tex.**, representative for the sale of **Lo-Hed** electric hoists and car pullers.

A. O. Smith — SW

The **A & A Supply Company**, 2457 Idlewild Street, Abilene, Texas, has been named as area representative for the Electric Motor Division of **A. O. Smith Corporation**, Tipp City, Ohio. A. O. Smith is a leading manufacturer of motors for pumps used in water wells, irrigation, and the petroleum industry.

A & A Supply will represent the nationally known motor manufacturer in the western section of **Texas**. **A & A Supply Company**, through its Albuquerque office, will also represent **A. O. Smith** motors throughout New Mexico.

Allis-Chalmers — SE

Appointment of **E. T. Cuddeback** as manager, general products division sales, Southeast region, has been announced by **Allis-Chalmers Mfg. Co.**, Milwaukee. He will maintain his headquarters in the firm's regional office in Atlanta, Ga.



In his new position, Cuddeback is responsible for the promotion, planning and coordination of sales through the district offices, for **Allis-Chalmers** motors, pumps and motor controls, and **Texrope** drives.

Cuddeback joined **Allis-Chalmers** in 1946 and was assigned as a sales representative in the Atlanta district office. In 1948 he became manager of the Tampa district office and has been manager of the Florida district since 1952.

Pipe Linings — SW

Pipe Linings of Wilmington, California, has announced a new sales office in Fort Worth, for the states of **Texas, Oklahoma, and New Mexico**, with **C. O. Davin** in charge. Mr. Davin has been with **Pipe Linings** since 1951. Before joining the company Mr. Davin sold for **Warren Electric**. His address in Fort Worth is P. O. Box 1202, Telephone EDison 5-5891.

Vulcan Steel — SE

Vulcan Steel Container Co., Birmingham, Ala., has made the following appointments:

Cothran C. Graves appointed Southeastern Regional Sales Manager with headquarters at the company's main office and plant in Birmingham.

Fred L. Morris appointed Sales-Service Representative.

EXTRA YEARS

OF MORE DEPENDABLE POWER
and at less cost per pound of steam

TODD BURNERS

GAS OR OIL

PRODUCTS DIVISION

TODD SHIPYARDS CORPORATION

HEADQUARTERS:

Columbia & Halleck Streets, Brooklyn 31, N. Y.

PLANT:

Green's Bayou, Houston 15, Texas



Panellit — SW

Joseph E. Kleuger, former assistant chief engineer, has been appointed Regional Sales Manager for Texas, Louisiana, Oklahoma, Arkansas and parts of New Mexico and Kansas by Panellit Inc., Skokie, Ill. From his new headquarters in Houston, Texas, Mr. Kleuger will supervise a force of 20 agents who are technically trained to sell the firm's annunciators, control panels, data loggers and related products in the automation and control field.

Kaiser Aluminum — Tex.

The Electrical Conductor Division, Kaiser Aluminum & Chemical Sales, Inc. has appointed D. C. Keenan manager of the Dallas sales region.

Mr. Keenan was a salesman and later an electrical conductor sales supervisor in Dallas, Texas, before his promotion to E. C. regional manager there. He joined the company in 1952 following two years as assistant to the personnel manager of the Texas Power and Light Company.

Automatic Switch — N. C.

Dillon Supply Co., Box 111, Raleigh, N. C., has been appointed distributor of Solenoid Valves for Automatic Switch Co. of Florham Park, N. J.

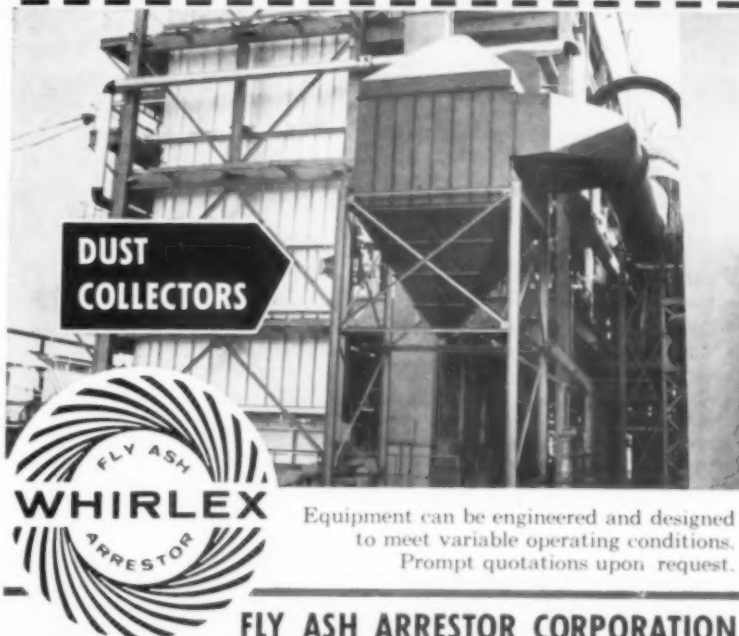
Trane — Miami

R. Douglas Hazen has been named manager of the newly franchised Trane Company, Miami, Florida, sales office. Trane is a national leader in the research and manufacture of air conditioning, heating, ventilating and special heat transfer equipment.

Hazen, 32, has been associated with Trane in several sales capacities since his graduation in 1950 from the company's application engineering training program.

He received his bachelor of science degree in mechanical engineering from the University of Florida.

Prior to this time, the Miami office has been a sub-office of the company's franchised Gainesville, Florida office.



Equipment can be engineered and designed to meet variable operating conditions. Prompt quotations upon request.

FLY ASH ARRESTOR CORPORATION

274 North First Street • Birmingham, Alabama

Southern News Briefs (Continued)

Gnuse Now Senior Power Engr. — Alcoa

Harmon H. Gnuse, Jr., has been appointed Senior Power Engineer, Aluminum Company of America, and has been transferred to Alcoa's main office in Pittsburgh, Pa.

He joined Alcoa at Franklin, N. C., in 1940, as an assistant electrical engineer for the wholly owned Alcoa subsidiary, Nantahala Power & Light Co. He was named electrical engineer in charge of generation, transmission and distribution for Nantahala P. & L. Co. in 1942, and became its vice president in charge of engineering in 1948.

Mr. Gnuse was appointed a director of Nantahala P. & L. Co. in 1950, and was made vice-president in charge of operations in 1956. He served in these two capacities until his recent appointment.

From 1934 until joining Alcoa, Mr. Gnuse served in several electrical engineering capacities with the Tennessee Valley Authority.

Rome Cable — Mo.

James W. Campbell, Jr. has been named sales representative in the St. Louis, Missouri, sales office of Rome Cable Corporation, Rome, New York.

Air Conditioning Expo. Jan. 26-29 — Philly

More than 400 leading manufacturers have engaged space at the 14th International Heating & Air-Conditioning Exposition, which is to be held January 26 to 29 at Convention Hall, Philadelphia. Already the display has become larger than the last held in Philadelphia in 1955.

As heretofore, the Exposition will be staged under the auspices of the American Society of Heating and Air-Conditioning Engineers. The Society's 64th annual meeting will be held concurrently.

White Diesel — South

Edward H. Glascock has joined the White Diesel Engine division of the White Motor Company as sales representative in the New Orleans region, which includes Louisiana, southern Arkansas, Mississippi, and Alabama.

Mr. Glascock will be responsible for sales to the oil field, marine, industrial, and municipal markets and at the service of area consulting engineers. His offices will be at 1038 National Bank of Commerce Building, New Orleans.

Fairbanks — SW

The Fairbanks Company, New York, N. Y., has announced the appointment of Henry H. Paris Distributor, Inc., Houston, Texas, as exclusive sales agent for Fairbanks bronze and iron body valves in the states of Texas, Oklahoma and Arkansas.

One of the leading industrial sales agents in the Southwest, the Henry H. Paris Distributor Co. has been selling oil well, refinery and industrial products for over 25 years.

Yarway — Atlanta

Yarnall-Waring Company has announced the appointment of Charles H. Finch as Atlanta District Manager, succeeding Roger Martin, who died recently.



Mr. Finch has been with Yarway for the past ten years in the Atlanta office and is well known to the company's utility and industrial customers and trap distributors in the area.

Mr. Finch received his technical training at Georgia Tech. He was inducted into the U. S. Army as a Private and was separated five years later as a Major in the U. S. Corps of Engineers.

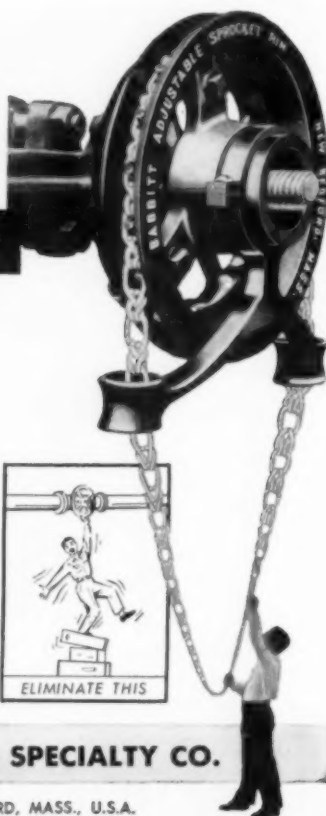
Safe Operation Of OVERHEAD VALVES

with a

Babbitt

Adjustable
SPROCKET RIM
with Chain Guide

- Simplifies pipe layout
- Fits any size valve wheel
- Easy to install and operate
- Operates any valve from plant floor
- Time and money saving fixture
- No maintenance; first cost only cost
- Packed, completely assembled, one to a carton
- Hot galvanized, rust-proof chain available for all sizes
- Easy to follow instructions with each unit
- Your supplier carries complete stocks
- Write for new descriptive catalog sheet and prices



Babbitt

STEAM SPECIALTY CO.

3 BABBITT SQUARE, NEW BEDFORD, MASS., U.S.A.

McJunkin Corp. Expands Service to Southwest

McJunkin Corporation, Charleston, West Virginia headquartered supplier of tubular goods, industrial supplies, stainless products and oil and gas supplies, now has a full stocking branch in Houston, Texas.

McJunkin has purchased the inventory and taken over the lease of Houston's Buffalo Industrial Supply Company. Stocks have been greatly increased and broadened.

Larry E. Battin, who has been McJunkin's Southwest District Manager, is Manager of the branch operation in Houston and Mack O. Roberts is in charge of oil and gas sales.

Other McJunkin southern branches, warehouse stocks and sales offices are located in Atlanta, Georgia; Allen, Louisville and Pikeville, Kentucky; and Hamlin and Lenore, West Virginia.

P. H. Nichols & Co. Union Iron Agent

Union Iron Works, nationally known steel boiler manufacturer, has appointed P. H. Nichols & Company as agents serving Florida, Georgia, South Carolina, North Carolina and Alabama.

P. H. Nichols & Company has a quarter of a century of experience in the sale and servicing of steam generators and allied products to Southeastern industry.

Cooper-Bessemer — Tex.

Acquisition of Creole Engineering, Inc., Houston, Texas, as a new wholly owned manufacturing and engineering subsidiary, has been announced by E. L. Miller, President and General Manager of The Cooper-Bessemer Corporation, Mount Vernon, Ohio.

The entire Houston operation is to be headed by T. E. Kraner as President. Mr. Kraner was formerly District Manager of Cooper-Bessemer's Caracas, Venezuela office, and more recently of the New Orleans office.

Initial engineering and construction at the Company's new Houston subsidiary will concentrate on completely packaged, pre-piped gas engine compressors.

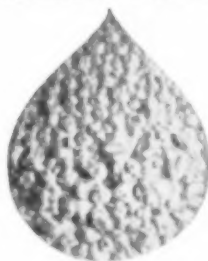
CONCENTROL

PROVIDES

LOW COST, EFFECTIVE CONTROL

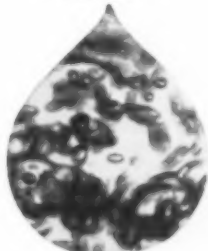
of FOAM and BOILER WATER CARRY-OVER

PROVED IN THE LAB:



BEFORE:

Foaming of highly alkaline solutions in glass test cylinder.

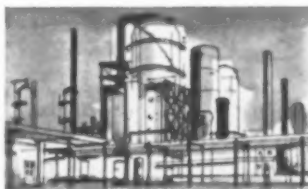
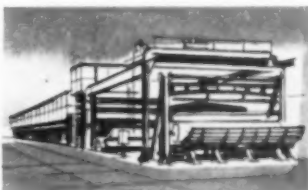


AFTER:

Same solution after addition of 12 ppm of Bird-Archer Concentrol antifoam.

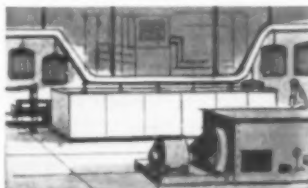
PROVED IN THE FIELD:

Concentrol eliminates foaming, maintains dissolved solids of 10,000 ppm with alkalinity in excess of 2,000 ppm in East Texas refinery.



Concentrol reduces blowdown rate from 15% to 5%, keeps steam quality high in paper mill using highly alkaline makeup water.

Concentrol eliminates boiler carry-over caused by high alkalinity for an automobile radiator manufacturer using a carbonate water that is Zeolite softened.



Concentrol is available in liquid, powder or briquette forms. Fast acting and resistant to hydrolysis or breakdown under normal boiler temperatures and pressures, it can be fed either continuously or in slugs to boilers. Many plants get the advantages of positive foam control *plus* boiler water sludge conditioning by using Concentrol in combination with organic sludge conditioning agents.

Let a Bird-Archer Water Treatment Engineer prove what Concentrol can do in your plant. Bird-Archer is always as near as your phone.



BIRD-ARCHER WATER TREATING CONSULTANTS

The BIRD-ARCHER Company, 4337 N. American St., Phila. 40, Pa.

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NEW Catalogs & Bulletins

STEAM TURBINES . . . FURNACES BOILERS, STOKERS, BURNERS

4 — Steam Generators — Bulletin AX-1 describes auxiliary equipment and design features of the Amesteam Generator for sizes 10 through 600 hp and illustrates how this integrated design reduces cost and increases life and reliability. — AMES IRON WORKS, INC.

6 — Package Boilers — Practical construction with Continental two pass design described in Bulletin BE100. Units range in size from 20 to 600 hp; 15 to 250 pressures burning oil, gas or combination. — BOILER ENGINEERING & SUPPLY.

23 — Soot Blowers — Bulletin 1030 describes Vulcan T-30 retractable soot blowers, available in lengths up to 38 ft. Includes sectional drawings and special design features. — COPES-VULCAN DIVISION.

27 — Pneumatic Spreader Stoker — Bulletin shows how unit combines coal drying, metering, conveying, uniform burning and cinder return in one efficient system. — IRON FIREMAN MFG. CO.

40 — Coal for Heating & Cooling — 16 page brochure describes boiler plant for heating and cooling the Hillside, Ill. Shopping Center. Drawings show the boilers and coal and ash-handling equipment. — BITUMINOUS COAL INSTITUTE.

51 — Packaged Water Tube Boilers — Complete data and dimensions for boilers ranging from 8,000 to 50,000 lb/hr, firing oil or gas or both, described in 12 p Catalog 111-D. — SUPERIOR COMBUSTION INDUSTRIES, INC.

52 — Pulverizer — Low power consumption and less maintenance with planetary roll and table mill for pulverizing solid fuels to commercial fineness. Bulletin MB58-1 gives details. — FOSTER WHEELER CORP.

76 — Packaged Combustion — Gas, oil or combination packaged forced draft burner for either conventional or pressure firing of scotch marine boilers; larger sizes for water

tube boilers; flame retention ring insures stable operation over full range; 13 sizes from 60 to 500 hp described in B13 literature. — THE WEBSTER ENGINEERING COMPANY.

88 — Industrial Burners — General Bulletin 757, 16 pages — Describes and illustrates industrial oil burners, gas burners, combination gas and oil burners for boilers, dryers, stills, retorts, kilns, etc., and fuel oil pumping and heating units which go therewith. — NATIONAL AIROIL BURNER CO.

FANS—PUMPS—COMPRESSORS HEATERS—HEAT EXCHANGERS

100 — Power Plant Pumps — Bulletin BJP 58-8 covers complete line of standard pumps for all power plant requirements — from 12,000 hp, doublecase boiler feed pump, to condensate, circulating and booster pumping duty. Also, special pumps for nuclear power plant installation. — BYRON JACKSON PUMPS, INC.

103 — Fire Pumps — Selection charts and "typical" fire pump specifications featured in 36 p Bulletin B-1500. 120 approved pumps tabulated by Underwriters' and Factory Mutual and listed according to types of drive. — PEERLESS PUMP DIVISION.

132 — Glassed Centrifugal Pumps — 12 page Bulletin 725.2 describes line of glassed pumps for handling corrosive acids and alkalis. Every part of pump exposed to liquid has a tough glass surface. Specification, ratings, dimensions. — GOULDS PUMPS, INC.

143 — Chemical Feeders — 36 p Bul. 1136 describes metering pumps — types, construction, displacement and operating pressures. Gives handling recommendations for chemicals, acids, etc., and volumetric conversion tables. — MANZEL.

147 — Strainers — Bulletin 400 describes "Ezy-Kleen" line featuring removable clean-out baskets. Offer low pressure drop protection (head of pump) from undesirable substances in pumpage. — BLACKMER PUMP COMPANY.

165 — After Cooler — Bulletin 130 shows how the Aero unit removes moisture from compressed air or gases; "cools" water for jackets and intercoolers; cools air or gases in both power and process systems; and protects air tools and pneumatic systems from water damage. — NIAGARA BLOWER COMPANY.

INSTRUMENTS—METALS CONTROLS—REGULATORS

208 — Water Level Alarms — Brochure D1 — Float operated low and high water level alarms and fuel cut-offs, for low and medium pressure boilers, tanks and other vessels. — RELIANCE GAUGE COLUMN CO.

212 — Automatic Temperature Control — Data sheets describe versatile automatic indicating temperature control offering many sequence combinations—step-heating, heating and cooling, wide limit control, or temperature control plus operation of

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signal devices.—SARCO COMPANY, INC.

246—Desuperheater—Product Specification M55-1 describes design, installation, and typical application of high capacity, fast acting spray type steam desuperheater.—BAILEY METER CO.

241 — Liquid Level Controllers — Catalog No. 405 illustrates and includes technical, instructive and descriptive information on the 12,000 Series variable-displacement type controllers. — MASON-NEILAN.

248—Pump Pressure Regulators — Bulletin 5306 describes constant and differential pump pressure regulators for steam turbines, reciprocating and motor driven pumps. Complete sizing and capacity information as well as construction features. — LESLIE CO.

253—Combustion Analyzer — 4 p Specification E65-5 describes the "Heat Prover" which indicates per cent by volume oxygen and combustibles present in exhaust gases from all types of boiler and industrial furnaces. — BAILEY METER COMPANY.

264—Liquid Level Control — 32 p Bulletin F-4 describes the Level-Trol for automatically maintaining liquid level at desired point in a heater, condenser, exchanger or other vessels. — FISHER GOVERNOR COMPANY.

297—Remote Signal Alarms—Bulletin WG-1824 describes how lights on horns, operated by indicator control unit give instant warning of any serious deviation from normal boiler water level. — YARNALL-WARING COMPANY.

PLANT EQUIPMENT—WELDING TOOLS—PROCESS SPECIALTIES

300—Fact Folders — 23 up-to-date industrial fact-file folders on aluminum, steel, copper, stainless steel,

insulation, roofing and other industrial supplies immediately available from 9 Southern warehouses. — REYNOLDS ALUMINUM SUPPLY CO.

304—Backing Rings — Bulletin 56-2 describes rings designed for fast economical fit-up in piping, tubing, fittings and valves. Shows how rings assure uniform complete-penetration welds and ease of handling in both shop and field. Carbon steel, wrought iron, chrome alloys, stainless, aluminum and copper.—ROBSON BACKING RING COMPANY.

327—Steam Fan Heater — Bulletin 109 discusses heater design which makes full use of all latent and sensible heat in steam up to 200 lbs without requiring expensive piping and pressure reducing stations. Ap-

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plicable to large plant heating or process. — NIAGARA BLOWER CO.

336—Retaining Walls—Catalog RW 3555 shows how bin-type walls stabilize slopes and gain valuable ground for buildings, parking areas; all metal cellular construction; all-bolted assembly means small crews can do the job.—ARMCO DRAINAGE & METALS PRODUCTS, INC.

344—Air Compressor—8 p brochure illustrates and describes the Channel-Flo Compressor, a 2-stage, 200 psig rated motorcompressor available in 1½ and 2 hp sizes. Flange-mounted directly on driving motor.—INGERSOLL-RAND CO.

350—Industrial Space Heaters—Bulletin GC 4-55 describes complete

line of oil or gas fired Thermobloc industrial heaters for any size job. Completely self-contained, fully automatic. — THERMOBLOC DIV., PRAT-DANIEL CORP.

367—Rails—Catalog 575 illustrates rail sections in profile, complete with design dimensions drawn to scale for use in comparison with actual end sections samples, or for use with tracing drawings.—L. B. FOSTER CO.

PIPING, VALVES, FITTINGS STEAM SPECIALTIES, TRAPS

411—Steam Trap Book — 44 page Steam Trap Book contains useful data on trap sizing, calculation of condensate loads, installation and

maintenance data. — ARMSTRONG MACHINE WORKS.

417—Welding Fittings — 192 page Cat. 54 gives design data on piping and piping application including digests of specifications, working pressures, design formulas, etc. Covers welding fittings, prefabricated pipe, forged steel flanges, and pipe coils. — MIDWEST PIPING COMPANY, INC.

419—Small Gate Valve — Multiple applications of small forged steel gate valve noted in Catalog 10. Low maintenance. Sizes from ¼" to 2"; rising stem with yoke or rising stem with inside screw; Pressures from 380 psi at 1000 F to 2000 psi at 100 F. — THE CHAPMAN VALVE MFG. COMPANY.

426—Pressure Regulating Valves — Standard line of regulating valves for steam, water and air service described in Cat. 77. Complete specification data. — MASON-NEILAN DIV.

438—Steam Traps — 8 p Bulletin T-1742(57) illustrates and describes high capacity impulse steam traps. Includes capacities, dimensions, weights, and prices.—YARNALL-WARING CO.

442—Sewer Pipe — Folder SF-14056 describes how Smooth-Flo Sewer pipe provides top flow capacity and strength of corrugated metal. Flexible design, strong joints, and centrifugally-spun asphalt lining. — ARMCO DRAINAGE & METAL PRODUCTS, INC.

MAINTENANCE PACKING GASKETS, LUBRICATION

512—Lubricator Vacuum Type Pumping Unit—If your plant is experiencing difficulty with visibility and excessive maintenance on lubricator sight glasses, the new 82

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vacuum pumping unit will offer lower cost. Form 1263 gives principle of operation and advantages.—MANZEL.

536—Packing Handbook — Bulletin AD-162 details a wide variety of packings, gaskets and seals and their materials of construction and uses. Contains detailed table listing effect of numerous gases, liquids and solvents on packing materials. — GARLOCK PACKING CO.

543—Belt Clamps — Bulletin FP-1 describes new lightweight durable belt clamps that can be easily operated by only one man. Can be used for installing new belt splices or for shortening belts.—FLEXIBLE STEEL LACING CO.

545—Correct Lubrication — "Lubriplate Data Book" shows importance of providing and maintaining proper and economical maintenance of all types of plant machinery thru adequate lubrication. — FISKE BROTHERS REFINING CO.

552—Packing Removal Tool — Bulletin DHSP describes the Dura Hook that "works around corners" for removing old packing from stuffing boxes.—DURAMETALLIC CORPORATION.

584—Zinc Coatings — Bulletin describes Galvanox, a special zinc coating applied as a paint to provide galvanic protection to metals.—SUBOX, INC.

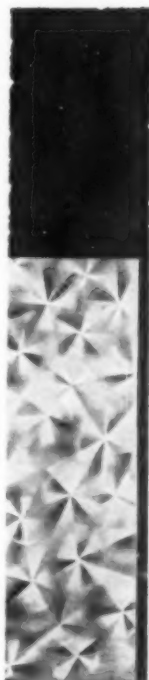
586 — Tube Expanders — 120 page Catalog 88 covers expanders and repair tools for boiler and heat exchanger tubes. — THOMAS C. WILSON, INC.

ENGINES, DRIVES POWER TRANSMISSION MATERIALS HANDLING

613—Monorail Applications — Bulletin C-1 — "Handling Problems Solved" — gives hundreds of illustrations of monorail applications to handling problems in various industries. Equipment advantages also illustrated. — AMERICAN MONORAIL CO.

614—Vertical Transportation — Elevator Catalog — Describes and illustrates details of passenger and freight elevators, escalators, dumbwaiters, and modernization and maintenance equipment for use in industrial, utility and service plants. — OTIS ELEVATOR CO.

620—Shaft Couplings — Bulletin 98 describes various applications of full-floating shaft couplings. Used to connect shafts that are spaced far apart. — THOMAS FLEXIBLE COUPLING CO.



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TRADE MARK

adds years of life to Iron or Steel

Nothing protects iron and steel from rust better than zinc. And nothing applies zinc better than hot-dip galvanizing.

Our modern equipment assures small, tight spangles... smooth, uniformly heavy coats of zinc... no burrs or fins! A tough, long-lasting barrier against rust and corrosion.

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Accommodates pieces
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630—Mechanical Vibrating Conveyors — Catalog 890 gives information on conveyability and density of typical solid materials and provides data on how to "Do It Yourself" to get required length. — JEFFREY MFG. CO.

648—Belt Fastening Tools — Bulletins F-110 and F-111 — Describe new Flexco power tool wrenches and power tool boring punches, designed to speed up fastening of wide conveyor belts; and give recommendations on the use of various impact tools connected therewith. — FLEXIBLE STEEL LACING CO.

WATER TREATMENT, HEATING VENTILATING, AIR CONDITIONING REFRIGERATION, DUST & FUME CONTROL

702—Water Conditioning — Bulletin 611C, 20 p. describes manual & automatic softeners, zeolites and ion exchange resins, mixed-bed and multi-column deionizers, dealkalizers, ion exchange systems, filters & purifiers, and water treating chemicals. — ELGIN SOFTENER CORPORATION.

705—Test Your Tower—Bulletin offers simple, proved method by which you can determine how closely

your actual tower performance measures up to specified performance. Particularly applicable to operations geared to temperature of process cooling water. — THE MARLEY COMPANY.

710—Scale Remover—Bulletin shows how Anco Scale Remover quickly eliminates scale in boilers, water lines, refrigeration and air conditioning systems.—ANDERSON CHEMICAL COMPANY.

711—Refrigeration Condensers—Bulletin RC-2 shows how Vogt condensers step up rate of heat transfer and step down head pressures. Closed type for clean waters; film type where water is hard and forms scale. Units save power and refrigeration cost.—HENRY VOGT MACHINE COMPANY.

712 — Ion Exchange Equipment — Bulletin A-255 describes the various methods of ion exchange treatment which provide suitable boiler feedwater, process water, and purified solutions.—ILLINOIS WATER TREATMENT CO.

720—Power Roof Ventilator — 4 p Bulletin 550 illustrates and describes company's Centrilator, the

centrifugal power roof ventilator with the exclusive "jet siphon." Includes capacity and dimension tables. — CLARAGE FAN CO.

774—Refrigerating Units — Bulletin 97-F illustrates and describes low-pressure refrigerating units. — FRICK CO.

ELECTRICAL

804 — Electronic Ground Alert — Portable & stationary units detect line-to-ground faults immediately. Available for 220, 440, 2,300 and 4,160 volt ungrounded systems. Form 255 gives details. — DELTA ENGINEERING SALES CO.

815—Induction Motors — How spiral ventilation of two-pole motors eliminates hot spots and cuts windage noise described in Bulletin O5B8123A. Fans drive air thru holes in yoke, cooling stator lamination pockets, stator coils and absorbing heat from the rotor.—ALLIS-CHALMERS.

821—Electric Strip Heaters—Bulletin F1566 shows how to quickly and easily bolt or clamp Chromalox strip heaters to platens, dies, kettles, tanks, etc., for advantages obtained with electric heat.—EDWIN L. WIEGAND COMPANY.

829—Motor Control Centers — 12 p Bulletin GEA-4949D describes NEMA size 1-6 units applicable to all industries where two or more a-c and/or d-c motors can be controlled from a central location. — GENERAL ELECTRIC.

835—Motor Starters & Contactors— 12 p bulletin 14B8615 describes sizes 4, 5 and 6 (Type 425), 50 to 400 hp. Contactors incorporate arc centering blowout, which eliminates need for conventional blowout coils. —ALLIS-CHALMERS MFG. CO.

839—Power Transformers — 8 p booklet B-7299 "Preventive Maintenance of Power Transformers Through Modernization" includes component replacement descriptions, adaptations and methods of oil preservation.—WESTINGHOUSE.

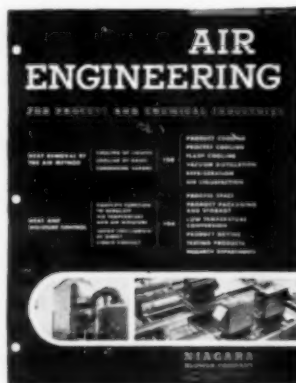
849—Electric Heating Units — 24 page Catalog 27-620 covers strip, oven, immersion and bolt heaters. Heating problems and solutions are discussed. — WESTINGHOUSE ELECTRIC CORP.

860 — Capacitors — Correct power factor at the load. Bulletin PF-1150 describes self-contained capacitors in sizes from ½ to 15 kvar. No additional switches or fuses required. — SPRAGUE ELECTRIC COMPANY.

AIR ENGINEERING by NIAGARA

- AIR CONDITIONING with precise regulation of air temperature and air moisture for processing, for product drying, packing, storing, low temperature conversion, for testing and research.
- "NO FROST" REFRIGERATION for food and low temperature conversion, for testing and operations at extreme low temperatures; for moisture control below the freezing point of water.
- AFTER COOLING and air drying for large air and gas compressors and AIR LIQUEFACTION.
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- COOLING QUENCH BATHS, FURNACES, INERT ATMOSPHERES.
- COOLING ROLLS, WELDERS, DRAWING OR EXTRUSION DIES.
- PRODUCT AND PROCESS COOLING CHEMICALS OR INTERMEDIATES.
- COOLING LIQUIDS OR GASES IN CLOSED SYSTEMS.
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- REFRIGERANT CONDENSING.
- ELECTRONIC PROCESS COOLING.

You will reduce your costs, solve your problems of water supply or disposal and get HIGH OPERATIONAL EFFICIENCY with Niagara "Aero"



Write for this Bulletin
No. 135

Evaporative Heat Exchangers, After Coolers, Condensers, Air Conditioners or Coolers for these important plant services or processes.

High operational efficiency means: precise temperature for improved product and process quality control, heat removal at rate of input, simple operating conditions, real economy in upkeep, sustained full capacity. It means the lowest expense for up-keep.

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NIAGARA BLOWER COMPANY

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Niagara District Engineers in Principal Cities of U. S. and Canada

**HOSPITAL
burns waste**

in a Plibrico INCINERATOR



NEW MOUNT SINAI HOSPITAL

in Toronto features equipment and facilities that are advanced even today, several years after completion. For example, every room's sound proof, every bed's pushbutton controlled and equipped for centralized oxygen service.

Behind the scenes in this 351 bed hospital there's one piece of equipment which, and we quote, "is invaluable in keeping the hospital clear of unsanitary refuse and pathological waste." That's the Plibrico incinerator, of course. Actual performance checks show this unit, conservatively rated at 600 lbs./hr., handles up to 800 lbs./hr.

Hospitals, schools, industrial plants, supermarkets . . . Plibrico incinerators, ruggedly constructed inside and out, provide efficient economical disposal for all . . . handling any type or amount of waste. Burn your waste in a Plibrico incinerator.

You can determine the model you need with the handy tables in our complete catalog. Write for a copy, or call your local Plibrico man.

Plibrico INCINERATORS

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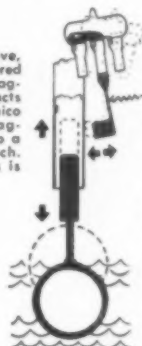
BOILER SAFETY

MAGNETROL

BOILER WATER LEVEL CONTROLS

"Blow-down" the float chamber once-a-shift; inspect the switches once a month—that's all you have to do to keep a Magnetrol in tip-top safe shape. It's made that way. The secret is all in the simple magnetic operating principle as pioneered and perfected by Magnetrol.

Standard Magnetrol Units are available for pressures to 600 psi and temperatures to 750°F., for single or multi-stage control with as many as three separate switching actions. Also special units for more extreme requirements. For full details, mail coupon.



A magnetic sleeve, raised and lowered within a nonmagnetic tube, attracts or repels an Alnico permanent magnet attached to a mercury switch. Basically, this is Magnetrol.

MAGNETROL, Inc.

MAGNETROL, INC., 2118 S. Marshall Blvd., Chicago 23, Ill.

Please send Catalog Section III with full information about Magnetrol Boiler Water Level Controls.

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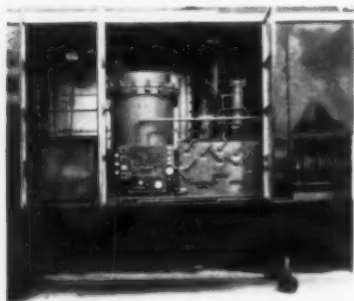
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NEW Product Briefs

Mobile Oil Reclaimer

K-1 A new large mobile oil reclaimer has been completed by **The Hilliard Corporation**, 100 W. Fourth St., Elmira, New York. The Model 500-X Duplex, Hilco Hyflow Oil Reclaimer is designed for purification of transformer insulating oils in the field to prevent oil or transformer breakdown. The Hilco Reclaimer removes water, sludge, acids and other oil oxidation products, dissolved paint, bushing compound, metallic soap, and other contaminants.



The unit consists of a flat trailer upon which is installed a 500 gph reclaimer, 375 and 275 gallon dirty and clean oil storage tanks, 50 kw gasoline engine driven electric generating plant, hose reels and storage space for filter material.

Features are the central electric and valve control panels operating oil and vacuum pumps and providing ready reading of all pressures, temperatures, fluid levels, and direction of flow. (Two single cartridge fuller's earth filters are handled by telescoping electric hoist.)

Dye Penetrant Inspection

K-2 **Magnaflux Corporation**, 7300 W. Lawrence Ave., Chicago 31, Ill., has announced an important safety improvement in its Spotcheck dye penetrant inspection materials, which are now available in non-

flammable or very-high-flash-point formulas in either pressure-spray cans or in bulk.

The new Spotcheck, which provides a convenient spray-can dye inspection method for locating cracks, seams, porosity and other defects open to the surface in almost any solid material, is also nontoxic, although the manufacturer does advise use in reasonably ventilated areas.

Cleaners and developers are not made with carbon tetrachloride-base solvents, but with the safer chlorinated hydrocarbons. Oil-base Penetrants have chlorine-free formulations. They can be used to test machinery parts almost anywhere in the plant or in the field, and under conditions that previously could have been considered as fire hazard.

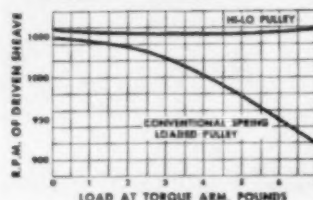
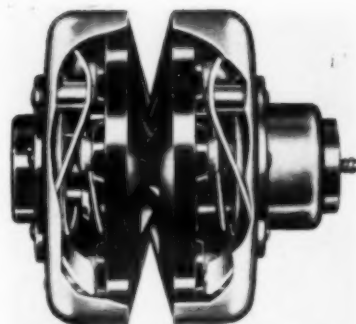
The new safety formulas are available in 12-ounce pressure-spray cans, in quart, gallon, 5-gallon cans, and in 55-gallon drums. Gallon sizes and under are available in case lots.

For More Free Data **CIRCLE CODE NO.** on the Handy Return Card — Page 115

Bin Vibrators "Pin-Point" Action

K-3 Announced by **Eriez Manufacturing Company**, Erie 1, Pennsylvania, is a new series of unit (bin) vibrators especially designed for "pin-point" installation on bins, hoppers, etc., up to 14 cu ft capacity. Where materials being handled show a tendency to pack, bridge or stock in bins or chutes, the trouble is readily overcome by applying one of the Eriez units at the precise point of difficulty, where its concentrated vibratory action permanently insures a continuous smooth flow of material.

Requiring no rectifier, and working directly from either 50 cycle a-c or 60 cycle a-c with no change in any component, the new vibrators are further characterized by almost noiseless operation.



Variable Speed Pulley

K-4 Constant speed ratio can be positively maintained over a wide range of load variation by means of a cam-controlled variable speed pulley manufactured by **Hi-Lo Mfg. Co.**, Lovejoy Flexible Coupling Co., 4949-H W. Lake St., Chicago, 44, Ill.

Pulley employs a cam and cam follower assembly which automatically regulates belt tension to the exact requirements of the load. Known as "Load-O-Matic" control, the result is that pulley speed is made independent of the load and load variations. "Drag" is eliminated and high shock absorbency provided.

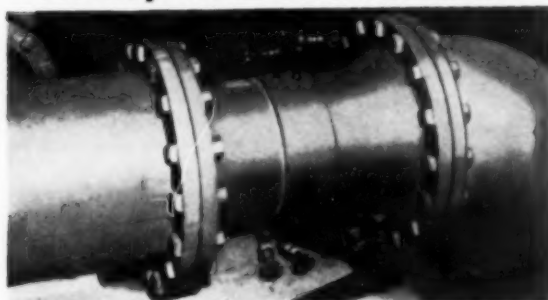
Each of the two driving disks contains its own cam and cam follower assembly, so that the pulley is actually double cam-controlled. This, in addition to its load-to-tension function, also insures constant belt alignment. Springs are used only to keep the driving disks in contact with the belt. They are not driving members.

It is available in sizes from .5 to 5 hp, ratios 2.5/1 (single pulley) and 6.25/1 (double pulley).

PIPING LAYOUT IS SIMPLER



...they need so little room



*GEN-TIL-LY

Gentile Flow Tubes are short. They need only minimum straight runs entering and following, and can be installed at practically any accessible point where flow conditions are reasonably steady.

Flow Tubes are furnished with individual head capacity curves—and for unusual piping arrangements, calibration curves for simulated conditions can be furnished.

Guaranteed Accuracy • Reproducibility
Minimum Head Loss

FOSTER ENGINEERING COMPANY

835 LEHIGH AVENUE

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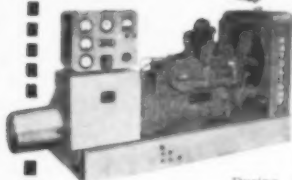
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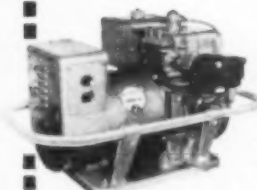
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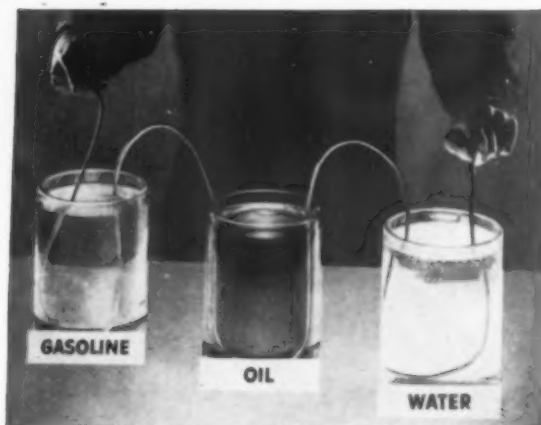
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ET296

ANACONDA®

New Product Briefs (Continued)

Stainless Steel Pumps

K-5 Centrifugal and neoprene impeller type pumps in stainless steel are now being produced by **American Machine Products, Inc.**, 172 Centre St., New York 13, N. Y., for use by the chemical process industries or wherever high resistance to corrosion is a factor.

The centrifugal pumps have sealed ball bearings, and their shafts, body and cover are made of acid-resistant Type 20 stainless steel. The stationary seats are of the same material and in addition, ceramic faced. When caustics are to be pumped, Stellite seats can be supplied.

All mechanical seals are corrosion resistant, and rotary faces of either pure carbon or glass filled Teflon construction are available. Pumps may be used with motors from 1/3 to 3 hp to deliver 56 gpm, no head to 75 gpm with 90 ft heads.

The impeller type stainless steel units are specially designed to prevent contamination of the materials

handled. They are self-priming and will pass small solids. Entirely of Type 316 stainless, these pumps are easy to take apart for servicing or inspection.

Available in 1/2 hp and 1 hp models rated at 10 to 25 gpm, respectively, these pumps accommodate a temperature range from 35° to 150° and will handle a wide variety of materials.

Flange Mounted Drive

K-6

Flange mounted gear drive, manufactured by **The Falk Corp.**, Dept. 255, 3001 West Canal St., Milwaukee 1, Wis., bolts directly to the driven machine. The unit is designed with bearing capacities for overhung and thrust loads to allow installation of this drive into the driven machine as a geared pillow block, if desired. Thus it is possible to eliminate one machine bearing and cut down the overall size of the installation.



Falk Flange Mounted Drives are available for horizontal or for vertical applications, with high speed shaft up or down and are furnished from stock in single reduction for applications of 1/2-10 hp, and in two double reduction ratios for 1/2-5 hp. Bulletin 7140 gives details.

For More Free Data **CIRCLE CODE NO.** on the Handy Return Card — Page 115

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ATLANTA	E. W. Harbaur	Poplar 7-1374
ROANOKE	J. J. Bower	Roanoke 6-3474
NEW ORLEANS	Factory Sales & Engineering	Canal 9151
HAVANA, CUBA	Wm. P. Bryant	M. 9284
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BOILER TUBE COMPANY OF AMERICA

BOILER TUBE Bldg., McKEES ROCKS, PA. (Pittsburgh District)

Plastic Pipe

K-7

A new rigid plastic pipe which can be used at higher operating pressures and temperatures than any other thermoplastic plastic pipe has been added to its line by **Carlton Products Corporation**, 10225 Meech Ave., Cleveland 5, Ohio.

Carlton's new HTHT pipe, made from an improved Kralastic resin developed by United States Rubber Company, is the first plastic pipe which can be used at temperatures as high as 180 F with tensile strength which allows working pressure ratings averaging 100 psi above other rigid plastic pipe or the same IPS size. Higher working pressure ratings mean that pressure-rated sizes will be lower in cost than existing Kralastic pipes.

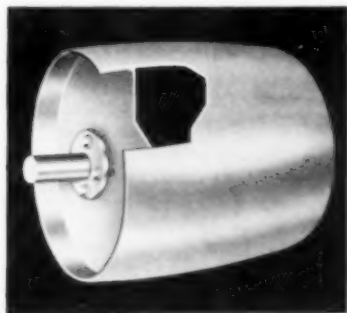
Carlton HTHT retains all of the properties which have made Kralastic pipe a leading choice for such applications as natural gas lines, food and beverage processing plant piping, radiant heating installations, electric conduit, and deep-jet and submersible-pump well piping.

The new Carlton HTHT pipe is available in sizes from 1/2 through 6 in., for working pressures of 100, 125, 150 and 200 psi, and also in Schedule 80 IPS for working pressures to 500 psi.

Curve-Crown Pulley

K-8 Stephens - Adamson Mfg. Co., Ridgeway Ave., Aurora, Ill., has developed the Curve-Crown Pulley — an absolutely round-rimmed pulley with a single seam, 100% welded on both the outside and inside.

The crown of the pulley is accurately formed on the outer ends of the rim, providing maximum training effect but eliminating belt stretch and wear, usually prevalent with the conventional high-centered taper crown.



Pulley design also features a new Squeeze-Lock Hub which effectively transfers loads from shaft to hub and from hub to rim and yet, eliminates weldments between hub and pulley end plates. In addition, the Squeeze-Lock Hub provides sufficient locking forces without the use of keyways.

The theory of the Curve-Crown Pulley is based on the fact that training is needed only when the belt is running off or has a tendency to run off one side of the pulley. Therefore only the outer ends need be crowned. The result is far superior training effect and no belt stretch or wear.

Bulletin 558 gives engineering details.

Dry Fluid Drives

K-9 A new expanded line of Flexidyne Dry Fluid Drives and Couplings ranging in capacity from $\frac{1}{4}$ to 1,000 hp, has been announced by Dodge Manufacturing Corporation, Mishawaka, Indiana.

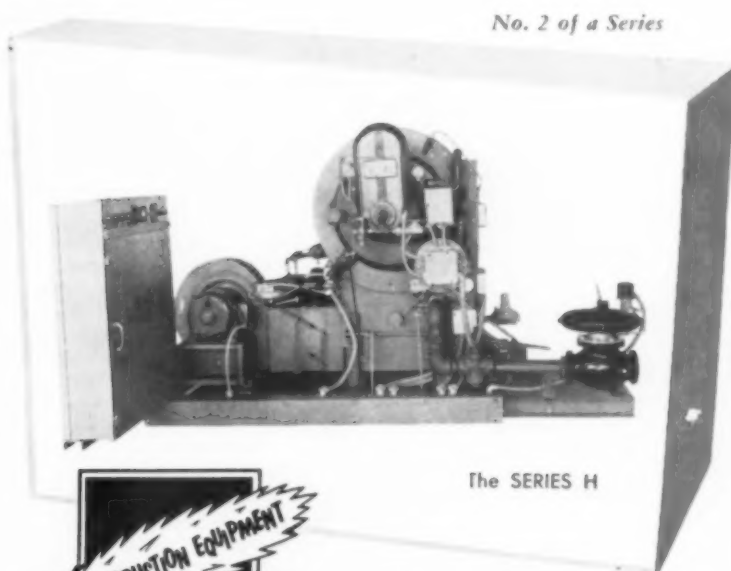
Added to the line are three larger sizes and a new small size for low horsepower applications. An 18-in. diameter Flexidyne is now available either as a drive for use with V-belts, or as a coupling for direct shaft-to-shaft connection. Either will deliver up to 200 hp at 1,200 rpm. Next larger size is the 22CK, available only

as a coupling and capable of transmitting up to 800 hp at 1,200 rpm. Largest of the new units is a 27-inch coupling, 27CK, with a horsepower rating of up to 1,000 at 900 rpm.

For medium light applications such as cranes, fans and small conveyors, the manufacturer has added a six-inch Flexidyne. This unit, available as a coupling or for use with V-belt drives, is rated at up to 2 hp at 1,800 rpm. This and a five-inch Flexidyne were designed for light duty, low-cost drives.

Insuring smooth, shock-free starts, Flexidyne has found acceptance in a broad section of industry. By picking up heavy inertia loads gradually, the device permits use of smaller motors, eliminates need for costly starting equipment, and reduces maintenance on motors and driven machines.

The full line of Flexidynes now available from stock consists of 18 units — eight drives and 10 couplings. New descriptive bulletin A-640B is available on request.



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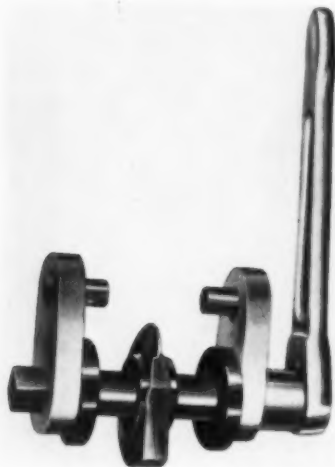
New Product Briefs (Continued)

Flange Spreader

K-10

An entirely new and different tool for spreading flanged pipe connections—to insert gaskets, orifices, etc.—is now being manufactured and marketed by **Wm. L. Riggs Co.**, 565 S. 127 E. Ave., Tulsa, Okla.

This tool has been most appropriately named "Safety Boy" because, by its use, flanges can be spread safer, faster and more economically.



A patented feature is a circular cam wedge. This feature, plus the use of a ratchet handle, provides pipefitters with a lightweight, handy-to-carry tool that will spread a flange in a matter of seconds.

Operation of the tool is fast and simple. First, all flange bolts are loosened and necessary bolts removed. The tool is anchored onto flanges by insertion of pins into flange bolt holes while at the same time inserting tapered edge of circular cam wedge into small opening between flanges. Pressure easily applied by ratchet handle quickly spreads flange connection.

Float Traps

K-11

A new line of float traps has been developed by the **V. D. Anderson Company**, 1935 W. 96th St., Cleveland 2, Ohio, with increased capacities for draining condensate or moisture from steam, air and gas equipment.

Traps are recommended for draining condensate from steam equipment continuously, and automatically, such as ahead of condensate meters where intermittently discharging bucket and thermostatic type traps cause erratic recordings. This continuous flow feature is also desirable for draining moisture from all types of air and gas purifiers, separators, receivers, tanks and other similar types of equipment.

The capacity ranges as high as 32,000 lb/hr of water depending upon the differential pressure. The traps are designed for a maximum steam operating pressure of 250 lb.

Furnished with or without a gauge glass, Anderson Float Traps are manufactured in three sizes. The No. 82 trap is tapped $\frac{1}{2}$ " or $\frac{3}{4}$ "; the No. 83 tapped 1" or $1\frac{1}{4}$ "; and the No. 84 tapped $1\frac{1}{2}$ " or 2". Bulletin S-2048 gives details.

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Cleaner for Coil Exteriors in Heating & Air Cond. Systems

K-12

Metalene Concentrate, a non-flammable, non-toxic and non-corrosive blend of synthetic penetrants, is being marketed by **Lester Laboratories, Inc.**, Box 4897, Atlanta 2, Georgia for cleaning coil exteriors in heating and air conditioning systems.

Coils and fins that are coated with dust and oily deposits cannot deliver reasonable efficiency. Metalene rapidly penetrates these soils, dissolves the binders and permits instant flush-off with water. In cases where water flush-off cannot be used, wiping will easily remove the loosened soil.

The Metalene concentrate is diluted one to three with water and sprayed into the coils, preferably from the intake side. Little or no waiting time is necessary before flush-off.

Subsequent routine cleaning of coils with Metalene is easily accomplished with dilutions up to 7 times with water.

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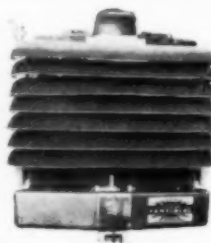
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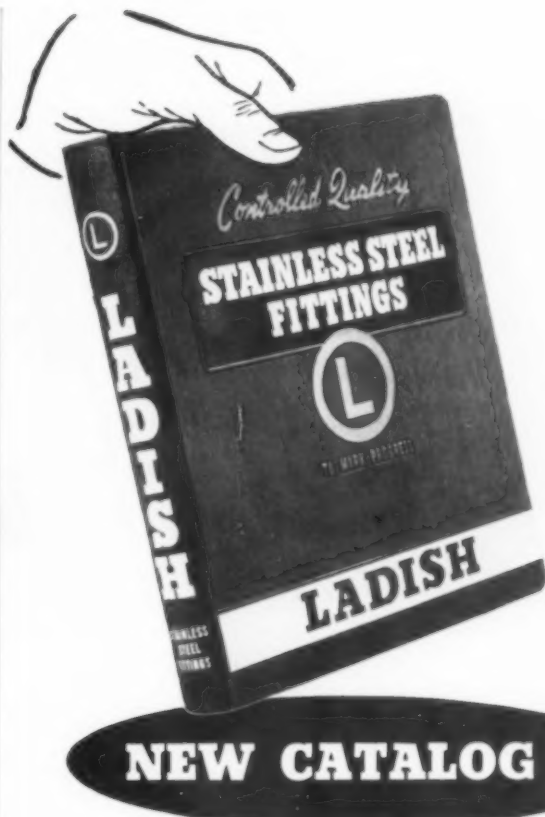
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SOUTHERN POWER & INDUSTRY for OCTOBER, 1958



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New Product Briefs (Continued)



Oil Pressure System

K-13 A compact, ready-to-connect, circulating unit for maintaining controlled volume and pressure of oil for stuffing boxes has been introduced by **Dura-metallic Corp.**, Kalamazoo, Mich., under the trade-name "CircOilator." Designed particularly for stuffing boxes containing double mechanical seals, it is also adaptable for conventional packings, bearings, and other hydraulic requirements. The system comes complete with 18-gallon tank, pump, motor, pressure regulator, filter, tank breather and relief valve as standard equipment.

Conveyors Slung Between Wire Ropes

K-14 A new twist in bulk materials handling is used by **Joy Mfg. Co.**, Henry W. Oliver Bldg., Pittsburgh 22, Pa., with its Limberope belt conveyors to lower initial cost and increase versatility. By suspending flexible Limberoller idlers between parallel stringers of steel wire rope, Limberope eliminates rigid support framing.

Resulting advantages are lower costs, quick, simple installation, and reduced maintenance. The whole system has fewer parts than ordinary belt conveyors, and is much lighter. It is easy to re-locate or extend.

Limberope usually consists of two parallel strands of wire rope stretched between widely separated anchor points. Rigid stands with integral return idlers support the ropes every 12 to 40 ft., depending on the load. Limberoller carrying idlers are swivel mounted in rigid brackets and slung between the ropes. Hand

screws secure all components.

The Limberoller idler consists of a series of neoprene discs molded to a neoprene covered cable that is suspended in a catenary between two sealed and lubricated for life bearings. The belt is supported in a natural arc. Idlers are free to flex and swivel, conforming to the load as the belt passes over them. Rigid brackets keep the rope stringers parallel and aligned.

Resilient and flexible, the Limberoller is said to improve belt life through absorption of load shock and more efficient support. Cushioned ride eliminated spillage and generally improves load handling.

Silicon Rectifier D-C Unit Substations

K-15 A new line of silicon rectifier d-c unit substations — for use in general industrial service — is now available from the **General Electric Company**, Schenectady 5, N. Y.

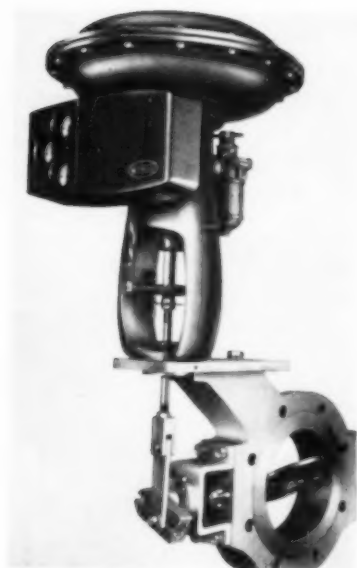
For use wherever 250-volt d-c power is required, these fully-integrated units are primarily intended for plant power supply, including cranes, elevators, machine tools, magnetic devices, and similar d-c loads.

Rectifiers are protected against d-c overloads and short circuits by a d-c circuit breaker. The mercury arc rectifier substation, which has served these applications heretofore, is now supplemented by this new line which offers several added benefits including simplified operation and higher efficiency.

Each substation includes incoming line section, high-voltage (up to 13,800 volts) primary Pyranol oil-filled transformer, silicon rectifier section, and d-c switchgear section. These substations supplement and extend the present line of silicon power conversion units by providing ratings for primary voltages higher than 600 volts a-c, and by providing kilowatt ratings above 300.

Units are available for a-c input ratings of 2400, 4160, 4800, 6900, 7200, 12,000, and 13,800 volts, three-phase, 60-cycle power. They are rated for d-c outputs of 250 through 1000 kilowatts for two-wire, 250/125-volt systems and from 250 to 500 kilowatts for three-wire, 250-volt systems.

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Butterfly Valves

K-16 Major design advances have been incorporated in the new 3200 series of wafer-type butterfly valves by **Mason-Neilan**, a Division of Worthington Corp., Norwood, Mass.

A special actuator mounting plate has been designed which provides maximum support and makes it possible for the actuator to be adjusted along a slotted plate so that actuator may be precisely positioned to deliver maximum power with minimum angularity. This enables the connecting stem and link to be in line and at right angles to shaft arm at mid-stroke, for either 60° or 90° (or any intermediate point) operation.

Maintenance is greatly simplified by oversized bearing brackets which permit easy access to the packing box and removal of the self-centering packing gland follower and gland to insert additional packing, without disconnecting linkage or detaching brackets.

The 32,000 series Butterfly Valves come with either power, hand wheel, or lever actuation. The hand wheel type is supplied with a closed gear box which includes an indicator; when used with power actuation de-clutching is provided. A wide range of sizes, from 2" to 24" are now available, in materials of cast iron, cast alloys or flame cut carbon steel; ratings to 250 lb. ASA iron and 300 lb. ASA steel.

All-Purpose Regulator

K-17 A new all-purpose two-stage regulator combining the best features of magnetic and electronic amplifiers has been developed by the **Clark Controller Company**, 1146 East 152nd St., Cleveland 10, Ohio.

Features are electrically isolated inputs, compactness and minimization of drift. The regulator can be applied on adjustable-voltage d-c drives and other applications for voltage and current regulation in speed, tension, position and similar systems.

The new Bulletin 5100 Type "GS" regulator has a magnetic amplifier control input stage and a grid-controlled rectifier power output stage. A new "grid switching" circuit controls the output rectifiers.

Regulators are available in three sizes: 5 amp maximum, 12.8 amp maximum and 36 amp maximum with intermediate ratings available. A-c supply is 220/440/550 volt, single phase, 60 cycle. A modification for 50 cycles is available. Standard modifications to provide timed rate response, current limit control and dual regulation are provided.

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New Product Briefs (Continued)



Plastic Gloves

K-18 New plastic gloves, rugged enough to be re-usable and inexpensive enough to be disposable, have been announced for industrial use by **Plasticsmith, Inc.**, Box 415, Concord, California. The gloves, available in large, medium, and small sizes, are packaged in convenient rolls of 12 to 1,000. Price in rolls of 1,000 is about 3 cents per glove.

Known as Handgards, the gloves for industrial use are made of 1 3/4 mil polyethylene material, heat sealed to insure a waterproof product. Handgards are pre-talcumed for ease in sliding on and off. Although strong, they do not impair the sense of touch. With all the advantages of polyethylene, such as resistance to acids, dyes, solvents, and most chemicals, Handgards have been cleared for use with radioactive materials.

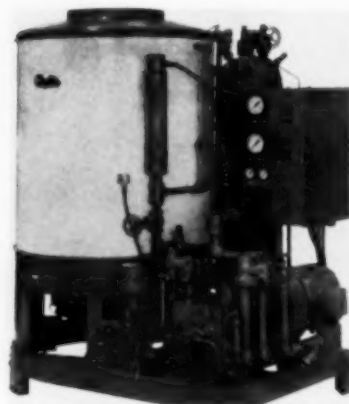
Ventilation is improved over tight-fitting gloves by the design of Handgards which are flared at the wrist, and yet can easily be sealed with a rubber band when the hands need to be immersed.

Oil Fired Steam Generator

K-19 The Clayton Manufacturing Company, 449 Temple City Blvd., El Monte, California, has announced a new 160 hp, oil fired steam generator.

New unit has the same high thermal efficiency as other Clayton generators, all of which are of the controlled circulation type, using a single pass, continuous water tube coil. This

spiral and helical design permits free expansion and contraction. Counter-flow circulation assures maximum heat transfer and 80% average thermal efficiency.



Boiler horsepower from 60 F feed-water is a normal 160 hp with maximum rating of 175 hp. Heat output at 33,475 Btu/hp is normal at 5,356,000 btu/hr; and, maximum at 5,858,125 Btu/hr. Output: at 212 F, and over, normal at 5,500 lbs/hr; maximum, 6,000 lbs/hr. This unit measures 74 in. long, 49 in. wide and 85 in. high. It weighs 5,200 lb. Control is simple and efficient with constant or variable load conditions being automatically determined by steam demand. A full "head" of steam is available from a cold start — inside of three minutes.

Packaged Cranes

K-20 Shaw-Box Crane & Hoist Division of Manning, Maxwell & Moore, Muskegon, Michigan, has announced a new line of "Load Lifter" underhung Crane Kits known as the "NH-SUH" Crane Assembly.

These packaged cranes are available in capacities from 1/2 to 10 tons with spans up to 50 ft. Each kit includes two completely assembled end trucks, required cross shaft bracket and bearing assemblies and shaft couplings, 20 ft hand chain, chain wheel complete with guide and a set of assembly instructions that are easy to follow. The bridge I-beam and shaft are purchased locally.

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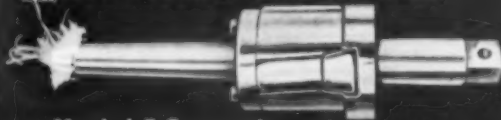
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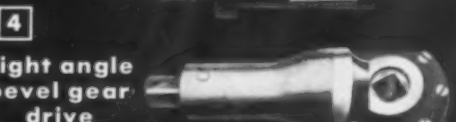
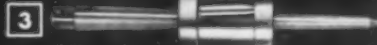
1 Air driven tube cleaners



2 Self-feeding tube expanders



Model E Expanders



1 Heavy-duty air driven tube cleaners are designed to deliver maximum power at the most efficient cutter head speeds while negotiating sharp bends, the Model ECT Air Cleaners are excellent for cleaning curved boiler tubes from 2 1/2" to 4 1/2" O.D.

2 Wilson Model 38 tube expanders are self-feeding and parallel expanding. They are of the single flare roll type. Available for tubes 1" O.D. to 4 1/2" O.D. with various roll lengths for tube seats 1/4" and up.

3 Flaring type expander 1" O.D. to 4 1/2" O.D. tubes, 1/2" to 2" tube seats.

3A Long reach type expander 1" O.D. to 4 1/2" O.D. tubes, 2 1/2" to 5" tube seats.

4 This Wilson bevel gear drive is expressly manufactured to meet continuous and heavy duty service conditions. The one piece all steel body is extremely rigid and not subject to distortion. The maintenance of perfect gear alignment is assured with consequent long service life.

Write today for your copies of Wilson Tube Cleaner catalog No. 77 and Wilson Tube Expander catalog No. 88.

TW-882

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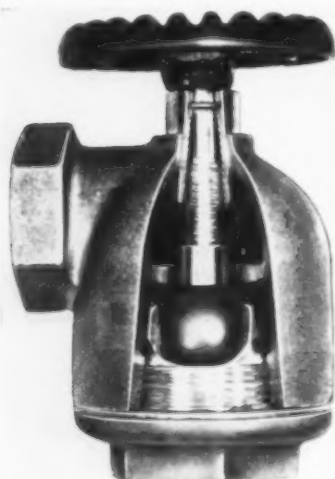
WILSON
TUBE CLEANERS • TUBE EXPANDERS



New Products (Contd.)

Shut-Off Valve

K-21 Nuisance leaks are prevented and maintenance costs reduced by the design of a new shut-off valve whose patented action insures positive closure despite heavy usage. This new development for water and air lines is a product of **Rene Manufacturing Co.**, 804 Northwestern Bank Bldg., Minneapolis 2, Minn.



INLET

Design feature is a neoprene ball which, when the stem is retracted, is forced against a beveled seat by fluid inlet pressure to form a positive seal against leakage. When the valve is open (turning the stem counter clockwise unseats the ball), the ball floats free but remains axially aligned with its seat. Reverse stem threads permit conventional operation of the valve.

Minimum effort is required to open the valve because incoming pressure helps move the ball from its seat once the initial flow is established. Stem leakage is eliminated by an O-ring seal.

Rotation of the ball causes a self-cleaning action that minimizes corrosion and collection of sediment within the cage and on the valve seat, thereby reducing maintenance costs by eliminating seat replacements and/or regrinding. This rotation also limits surface wear on the ball by providing an infinite number of seat surfaces.

Cast of bronze and with a machined brass stem, the Rene valve is available in $\frac{1}{4}$ and 1-in angle or in-line models for most applications

involving working pressure up to 150 psi.

High Frequency Motor Generator Set

K-22 A new vertical high frequency motor-generator set featuring easier installation and maintenance and complete protective controls has been announced by the **General Electric Company**, Schenectady 5, N. Y.

The m-g set is designed for foundry melting, forging, vacuum heating, experimental research and other induction heating or melting applications which require high frequency power.

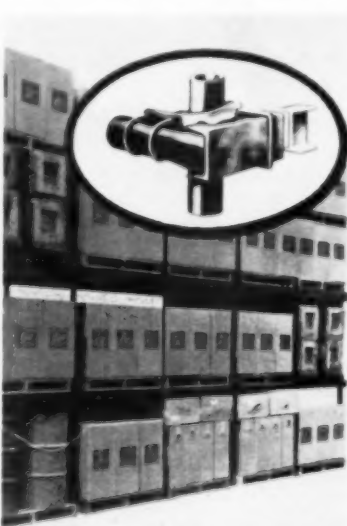
Both the open and enclosed sets consist of a high frequency generator driven by an induction motor mounted above it — with rotors assembled on a common shaft.

Since no special construction base is required, the line-up problem associated with horizontal m-g sets is eliminated. This also means easier installation.

For More Free Data **CIRCLE CODE NO.** on the Handy Return Card — Page 115

Beam Clamps Simplify Storage Rack Constr.

K-23 The new Beam - Strut heavy-duty clamps by **Tube - Strut Corp.**, 2960 Marsh St., Los Angeles, Calif., greatly simplify the construction of double or triple bay storage racks.



Racks are made of either standard channel or I-Beam and ordinary pipe

together with Beam-Strut clamps. The heavy-duty rack offers single or double entry; single, double or triple stacking; single, double or triple bay for pallet, skid or general purpose use.

Clamps permit use of either standard channel or I-Beam for the load-bearing stringers and ordinary pipe for the uprights and cross pieces. Industrial plants can use low-cost standard structural members and pipe which may be secured from many local sources. Changes or additions to Beam-Strut storage racks may be made at any time, thus providing maximum flexibility.

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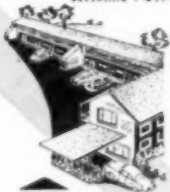
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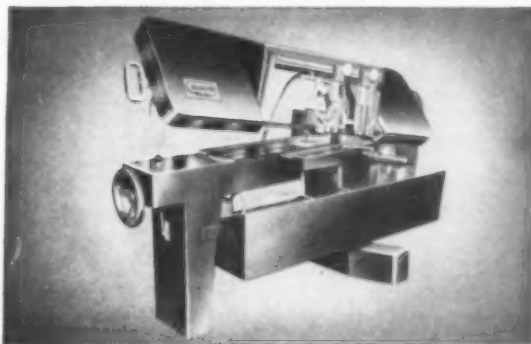
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SOUTHERN POWER & INDUSTRY for OCTOBER, 1958

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MODEL 610 cuts 6" round, 10" flat.

MACHINE TOOL DIVISION

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For more information, use Reply Card—Page 115

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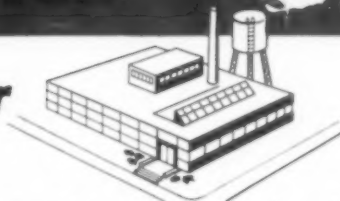
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